

transit service evaluation

berkshire rta

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BERKSHIRE REGIONAL TRANSIT AUTHORITY

Transit System Management

-EVALUATION REPORT -

OCTOBER 1979

Prepared By:

BERKSHIRE COUNTY REGIONAL PLANNING COMMISSION

The preparation of this document was financed in part through a grant from the U. S. Department of Transportation under provisions of Section 9 of the Urban Mass Transportation Administration Act of 1964. (UMTA Project #MA-09-0050).



Technical Report Documentation Page

1. Report No. UMTA-MA-09-0050-80-1	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Berkshire Regional Transit Authority Transit System Management Evaluation Report		5. Report Date October 1979	
		6. Performing Organization Code	
7. Author(s) Charles W. Cook		8. Performing Organization Report No.	
9. Performing Organization Name and Address Berkshire County Regional Planning Commission 10 Fenn Street Pittsfield, Mass. 01201		10. Work Unit No. (TRAI5)	
		11. Contract or Grant No. UMTA-MA-09-0050	
12. Sponsoring Agency Name and Address U.S. Department of Transportation Urban Mass Transportation Administration 400 Seventh Street, S.W. Washington, DC 20590		13. Type of Report and Period Covered	
		14. Sponsoring Agency Code	
15. Supplementary Notes Distributed by UMTA Office of Planning Assistance - Brian McCollom-UPM-13			
16. Abstract The report presents the results of a service evaluation study conducted in Pittsfield, Massachusetts. The purpose of the study was to review and evaluate the current transit services provided by the Berkshire Regional Transit Authority and to develop recommendations for service modifications which utilize low cost techniques to improve operating effectiveness. To collect the necessary information for the evaluation, a loading survey was conducted. This survey provided information on maximum loading, hourly ridership, passenger miles of travel and average trip length by route. The report serves as an excellent example of service evaluation within a small transit system			
17. Key Words Bus, fixed-route; evaluation techniques; productivity; planning and analysis; transit performance; planning tools; transportation systems management; performance indicators.		18. Distribution Statement Available to the public through the National Technical Information Service, Springfield, Virginia 22161	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 129	22. Price



FORWARD

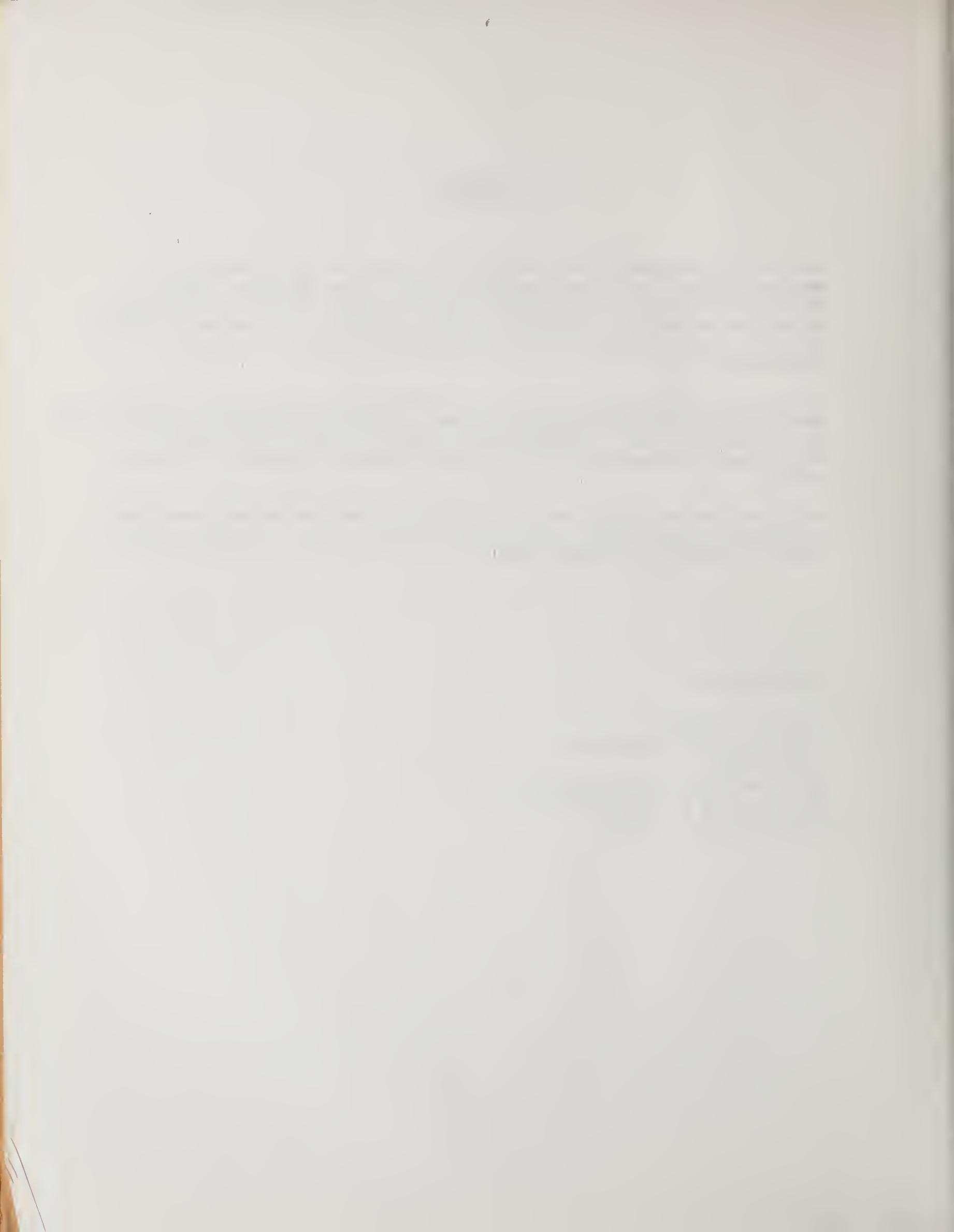
Many transit operators have a need for an evaluation system which can measure existing service performance. To assist these operators, UMTA has been funding, through its Section 8 Technical Studies Program, local studies in service evaluation. The purpose of these studies is to evaluate existing transit service and to develop recommendations and plans for service improvements.

This document summarizes the local evaluation study of the transit service provided by the Berkshire Regional Transit Authority in Pittsfield, Massachusetts. We believe this report is an excellent example of service evaluation in small transit systems and will be of great interest to operators of these systems.

Additional copies of this report are available from the National Technical Information Service (NTIS), Springfield Virginia 22161. Please reference UMTA-MA-09-0050-30-1 on your request.



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PREFACE

This "Transit System Management-Evaluation Report" has been prepared as part of an UMTA Section 9 Technical Studies Project (#MA-09-0050). This report updates work previously done in the preparation of the "Transit Development Program-Update Report", dated May, 1977.

As such, the report contains updated data and information on transit service in the BRTA area, an evaluation of BRTA operations, and recommendations for service modifications which utilize low-cost techniques to improve operating effectiveness.

This report was prepared by the Berkshire County Regional Planning Commission (BCRPC) in conjunction with the Berkshire Regional Transit Authority (BRTA). Charles W. Cook, BCRPC Transportation Planner, was the author of the report and was assisted by Glenn A. Russo with data analysis and graphics.

The report is being distributed to elected officials, public agencies, private operators, and other interested parties in order to form a basis for making decisions and to provide increased awareness of the transit program in the area.

BERKSHIRE REGIONAL TRANSIT AUTHORITY

TRANSIT SYSTEM MANAGEMENT

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TRANSIT SYSTEM MANAGEMENT

EVALUATION REPORT

1.0 INTRODUCTION

This report presents the results of a study updating the previous Transit Development Program-Update Report dated May 1977. This study was undertaken in order to review and evaluate the current transit services provided by the BRTA, with particular emphasis on the three new routes in Pittsfield, the overall fare structure, and the priority locations for bus stop shelters. In order to obtain basic information for this study, a loading survey was conducted on all routes in March 1979, after the new routes had been in operation for a year. This survey provided information on maximum loading, hourly ridership, passenger miles of travel, and average trip length by route. The results of the study also provide current data and information which can be used as a basis for decisions regarding other improvements to transit service which may be necessary in the near term.

1.1 Background

- January, 1974: ECI (Engineering Computer International) completed the original transit study for the area entitled Transit Development Program (TDP) For The Pittsfield Metropolitan Area.
- June, 1974: In accordance with Chapter 161 B of the Massachusetts General Laws, the Berkshire Regional Transit Authority (BRTA) was established consisting of Pittsfield, Dalton, Hinsdale, Lanesboro, Lenox, Lee, and Richmond.
- August, 1974: A part-time administrator was appointed and the Authority initiated steps to preserve existing public transit services and to expand that service in accordance with the ECI report.
- September, 1974: The BRTA received a \$74,039 grant from T.H.E.M., Inc. (Transportation for the Handicapped and Elderly in Massachusetts) which enabled the initiation of the North-South Route connecting Lanesboro, Lenox, and Lee with Pittsfield. In addition special van service was provided for the elderly and handicapped in these suburban towns as well as in Dalton.

- November, 1974: The BRTA began directly subsidizing the Dalton-Hinsdale Route.
- June, 1975: An application was submitted to UMTA for Section 3 capital assistance to purchase new vehicles in accordance with the ECI report and this grant was approved in July, 1976.
- July, 1975: The BRTA assumed operation of the Elm Street Route and, subsequently, was able to obtain the franchise rights to all transit routes from the existing operator.
- March, 1976: The BRTA filed Section 5 applications to UMTA for operating assistance for Fiscal Years '75 and '76. These were approved in November and December, 1976, respectively.
- April, 1976: The hours of operation on the North-South Route were expanded from 9-5:00 to 6-6:00 in order to serve commuters. Also, van service for the elderly and handicapped was begun in Pittsfield, five days per week.
- September, 1976: The BRTA hired a new administrator with transit experience to work full-time on the implementation of the Transit Development Program.
- May, 1977: The BCRPC completed the Transit Development Program-Update Report.
- June, 1977: The Site Selection and Preliminary Design for a Bus Garage and Maintenance Facility was completed by Gannett Fleming Corddry and Carpenter, Inc., and Margaret D. Lewis, AIA.
- December, 1977: The revised Dalton-Hinsdale routing and scheduling was put into effect.
- March, 1978: The BRTA received ten new heavy duty buses to replace the existing fleet and to implement three new bus routes in Pittsfield.
- July, 1978: The BRTA initiated a user-side subsidy for the elderly and handicapped with local taxi-cabs.
- October, 1978: The BCRPC completed plans for the expansion of transit services into North and South Counties.
- July, 1979: Saturday service was initiated on all routes and four additional communities joined the BRTA; North Adams, Adams, Great Barrington, and Stockbridge.

1.2 Previous Recommendations

The 1977 TDP Update Report itemized a number of recommendations. These recommendations have been implemented to varying degrees as described below:

1.2.1 SHORT TERM IMPROVEMENTS (By July 1, 1977)

1. Adjust schedules to accommodate the G.E. 8-5:00 shift, the CBD 9-5:00 work shift, and the CBD store hours from 9:30 to 5:30.

This recommendation has been partially implemented. However, notable exceptions are the inadequacy of service to G.E. from Lee, Lanesboro, and the West Side of Pittsfield. In addition, the CBD work shift is not well served by the North-South route.

2. Republish maps of the Elm Street route which clearly indicate that Coltsville and Mountain Drive are not always served every half hour.

This has not been done. A new system map is still under development.

3. Reschedule the North-South line to directly serve G.E. during peak hours.

This recommendation has not been implemented.

4. Expand service on the North-South route to cover the neighborhood north of Pontoosuc Lake in Lanesboro.

This recommendation has not been implemented.

5. Reroute the Dalton-Hinsdale route as shown in alternative F-1 and revise the schedule to provide Hinsdale with regular hourly trips.

This recommendation has been successfully implemented since Dec., 1977.

6. Establish fares for the dial-a-ride vans at \$1.00 per person.

This has not been implemented.

7. Initiate a system utilizing prepaid tickets to subsidize taxi and van service for the elderly and handicapped and to provide for coordinated funding through social service agencies.

This program began July 1, 1978.

8. Provide additional van service in Pittsfield from 4:00 p.m. to 6:00 p.m. by operating the vans from 8:00 to 6:00.

This has not been implemented.

9. Provide extra van service in Pittsfield on a standby basis for those groups sponsoring night meetings or for weekend service.

This has not been implemented.

10. Publicize the above changes well in advance of implementation in order to provide the public with sufficient notice to adjust to them.

This has been carried out where appropriate.

11. Continue efforts to implement the marketing and promotional strategies outlined in the original Transit Development Program.

This recommendation has been implemented in part. A system map, bus stop signs, and bus shelters have not yet been implemented.

1.2.2 MEDIUM TERM IMPROVEMENTS (After July 1, 1977):

1. Add three new fixed routes in Pittsfield serving West Housatonic Street, BCC, Onota Street, Highland Avenue, Williams Street, and Crane Avenue.

This recommendation was implemented in March 1978, when the new buses were delivered.

2. Depending on the success of the taxi service, expand the fleet of vans for the elderly and handicapped to provide for spare equipment and additional wheelchair accessibility by including in the next capital grant application provision for two additional vans with lifts and related features.

The necessity for this recommendation has not yet been determined.

3. Obtain a bus garage for the maintenance and storage of the authority's vehicles as was recommended in the ECI Report.

A preliminary engineering report was completed in June 1977, a capital grant application was filed, final engineering design has been completed, the job has been awarded to the lowest bidding contractor and construction has begun.

4. Follow through with the program for monitoring and evaluating transit services, which was also recommended by ECI.

This recommendation has been implemented on a continuing basis.

5. Initiate Saturday service on the current routes when the new equipment arrives. After weekday ridership is established on the new routes, test the viability of Saturday service on those also.

This recommendation was implemented on July 1, 1979, for all routes.

In addition to these summary recommendations, a variety of other suggestions and recommendations were made throughout the TDP Update Report. These other suggestions will be noted in the remainder of this report as they pertain to the evaluation of current services and the development of revisions to the Transit Plan.

1.3 BRTA Policies

The policies of the BRTA to provide local transit services are incorporated in Berkshire County's "Regional Transportation Goals and Objectives". These goals and objectives were endorsed by the BRTA in October 1976, as the basis of a policy plan for transit improvements. Of those goals and objectives, the following directly apply to public transit:

- The general overall goal of the Transit Authority is to support an effective integrated transit system as a public service which is part of a balanced multi-modal transportation system to provide for the safe, economical, efficient, and convenient movement of people.
- This public transit service should allow for improved mobility of the transit dependent (poor, elderly, handicapped, youth) and should provide for an alternative mode for choice users, in order to maximize their access to commercial and institutional locations, industrial and service jobs, and social and recreational opportunities.
- The transit system should operate efficiently to minimize costs to taxpayers and users, to help reduce traffic congestion resulting in less noise and air pollution, and to minimize energy consumption. Improvements to the transit system should consider low capital-intensive means to better utilize existing facilities including coordination of public and private services.
- Specific objectives of the Authority have been to preserve and stabilize the existing remnants of the once extensive transit system, to expand the service into the most marketable areas in Pittsfield, and to extend the service to outlying communities. The Authority also recognizes that special efforts are required to provide transit service which is accessible to the elderly and handicapped, and that effective promotion of the service is a vital necessity.

2.0 DESCRIPTION OF TRANSIT SERVICES

Transit services in the BRTA area are currently provided by public and private organizations including conventional fixed route buses, special van services, and taxis, as well as local public school buses. The focus of this study is on the operations of the BRTA; however, the context in which the BRTA service operates should be kept in mind (Table 1).

The BRTA currently provides transit services consisting of conventional fixed route service, vans, and a user-side subsidy for the elderly and handicapped. Nine thirty-three passenger transit buses operate weekdays over six routes on 30 and 60 minute headways from about 6 a.m. to 6 p.m. for fares ranging from 20¢ - 50¢ with half fares for the elderly & handicapped.

Free vans are also provided for the elderly and handicapped as a dial-a-ride service with 24 hours notice required. They operate from 8 a.m. to 4 p.m. with one van in Pittsfield every weekday and two vans providing service two days per week in the towns of Dalton and Lanesboro, and three days per week in Lenox and Lee. In addition, a ramp-equipped van to accommodate wheelchairs is available as needed.

A user-side subsidy program is also available for the elderly and handicapped which provides half price tickets to various social service agencies for distribution to their clients to use for taxi cabs or private chaircar operators.

Much information has been compiled during this study which describes the various aspects of the BRTA operations. This information was obtained from various sources such as BRTA records, U.S. Census data, on-board surveys, other surveys and reports as well as from observation and informal discussion with bus drivers and riders. This information and data has been tabulated and brought together in the appendix to this report. In addition, much of this information has been charted and mapped and is included here to visually illustrate various aspects of the BRTA transit services.

TABLE 1

TRANSIT INVENTORY - BRTA AREA 1979

	<u>No. Vehicles</u>	<u>No. Pass.</u>	<u>Vehicle Description</u>	<u>Service Description</u>
BRTA Fixed Routes	10	33	1978 31 Ft. Flexibles	9 Buses operate on 6 fixed routes
Mass. Rehabilitation Center	2	6	Vans-With Lifts	Handicapped transportation to center, mostly wheelchair
Christian Center	1	14	Van	Organization use
BRTA E&H Vans (Uncle John's)	3	11	Vans	Demand response service for elderly, handicapped
	1	9	Ramp Van	
Lee Council on Aging	1	4	Station Wagon	Elderly transportation
Pittsfield Senior Center	1	12	Vans	Elderly transportation
Red Cross	3	4	Station Wagons	Special patients, etc.
Uncle John's Vans Inc.	15-34	14	Vans	Special transportation for elderly, handicapped, assists other agencies
	1	9	Ramp Van	
<u>Taxis</u>				
Checker/Yellow Cab	22	4	Sedans	Pittsfield, Berkshire County
Grey Taxi	2	4	Sedans	Lenox area
Lee Cab Co.	1	4	Sedans	Lee area
Lenox Cab Co.	2	4	Sedans	Lenox area
Parks Taxi Service	2	4	Sedans	Lee area
Roy's Cabulance	2		GMC Vans	Special service for handicapped, wheelchairs
Berkshire Cabulance	1			Special service for handicapped, wheelchairs

TABLE 2

BRTA TRANSIT FLEET INVENTORY - FY 1979

1978 FLXIBLES 33 Passenger, 31 Ft. Long (9 Active Buses, 1 Spare)

<u>Bus No.</u>	<u>Odometer 6-30-79</u>	<u>Odometer 6-30-78</u>	<u>FY 79 Miles</u>
7801	49,430	11,219	38,211
7802	53,777	12,575	41,202
7803	59,129	15,627	43,502
7804	59,557	13,473	46,084
7805	61,057	14,877	46,180
7806	56,042	12,390	43,652
7807	57,945	14,268	43,677
7808	63,576	12,119	51,457
7809	59,734	12,370	47,364
7810	<u>63,019</u>	<u>13,148</u>	<u>49,871</u>
	583,266	132,066	451,200

1975 FLEXETTES 23 Passenger (Retained On A Standby Basis)

<u>Bus No.</u>	<u>Odometer 3-20-78</u>
7503	132,673
7504	133,994
7505	114,981
7506	127,039
7507	133,994
7508	<u>127,589</u>
	770,270

2.1 Fixed Route Ridership

The operations records of the BRTA over the recent past provide ridership data to enable an evaluation of ridership growth and patterns on an annual, monthly, daily, and hourly basis.

2.1.1 CURRENT RIDERSHIP:

Fiscal year 1979 (July 1, 1978 - June 30, 1979) represented the first full year of operation of all six fixed routes by the BRTA and resulted in an annual ridership of 662,506. This represents an average fixed route ridership of 2,568 riders per day trending upward over the year primarily due to normal growth on the new routes and growth due to the increasing cost of gasoline. In addition, rides provided by the elderly and handicapped vans, and rides on taxis under the user-side subsidy program accounted for 31,839 passenger trips, or 123 per day. The system is currently (as of July, 1979) operating at an average of 2,779 passengers per day on the fixed routes with another 145 using the E&H services for a total of 2,924 representing a 33.8% increase over July, 1978, due primarily to rising gasoline prices and the new user-side subsidy program.

2.1.2 HISTORICAL RIDERSHIP:

A look at historical data since 1977 for the well-established Elm Street Route shows a general upward trend of 23.7% over the three year period from FY'77 to FY'79 inclusive, including the fuel crisis of 1979. This historical data also shows a consistent peak usage for the year in December and January, with a low point in July, which is typical for transit buses and unlike automobile usage which peaks in the summer. An exception to this is noted in July of 1979, when the gas crisis overrode the usual July drop in demand (Figure 2).

2.1.3 HOURLY RIDERSHIP:

Information obtained from the loading survey in March 1979 included data on hourly volumes. This data can be compared with similar data developed in 1976 as part of the TDP: Update Report (Figure 3). This shows similar usage throughout the day in 1979 compared with the 1976 data, although 1979 shows a more typical morning peak.

Hourly ridership by route (Figure 4) points out the relative absence of the 7:00 a.m. peak hour on the North-South Route due, no doubt, to the lack of

FIGURE 2

BERKSHIRE REGIONAL TRANSIT AUTHORITY
AVERAGE DAILY RIDERSHIP PER MONTH

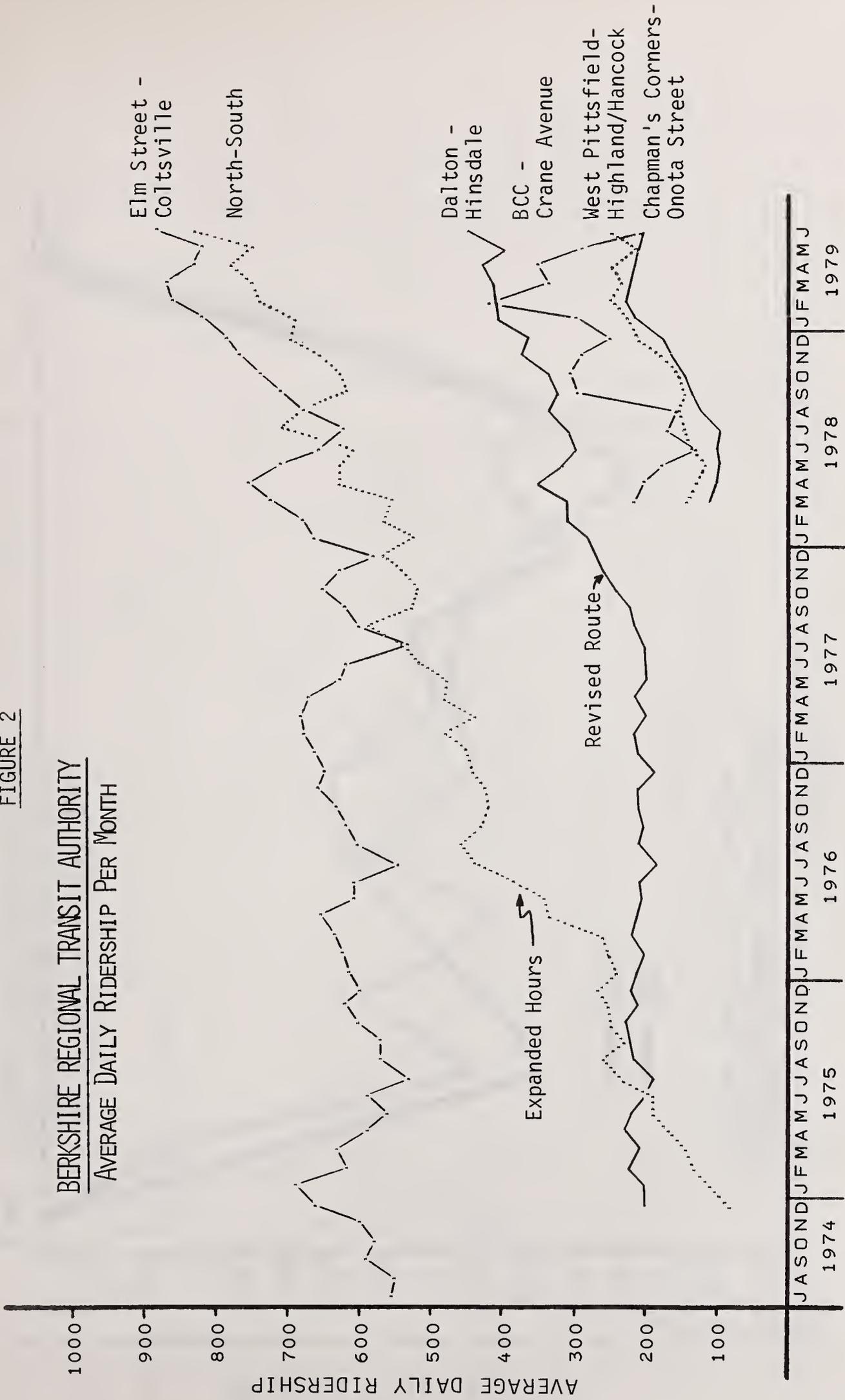


FIGURE 3

BERKSHIRE REGIONAL TRANSIT AUTHORITY
PERCENT TRANSIT RIDERS PER HOUR

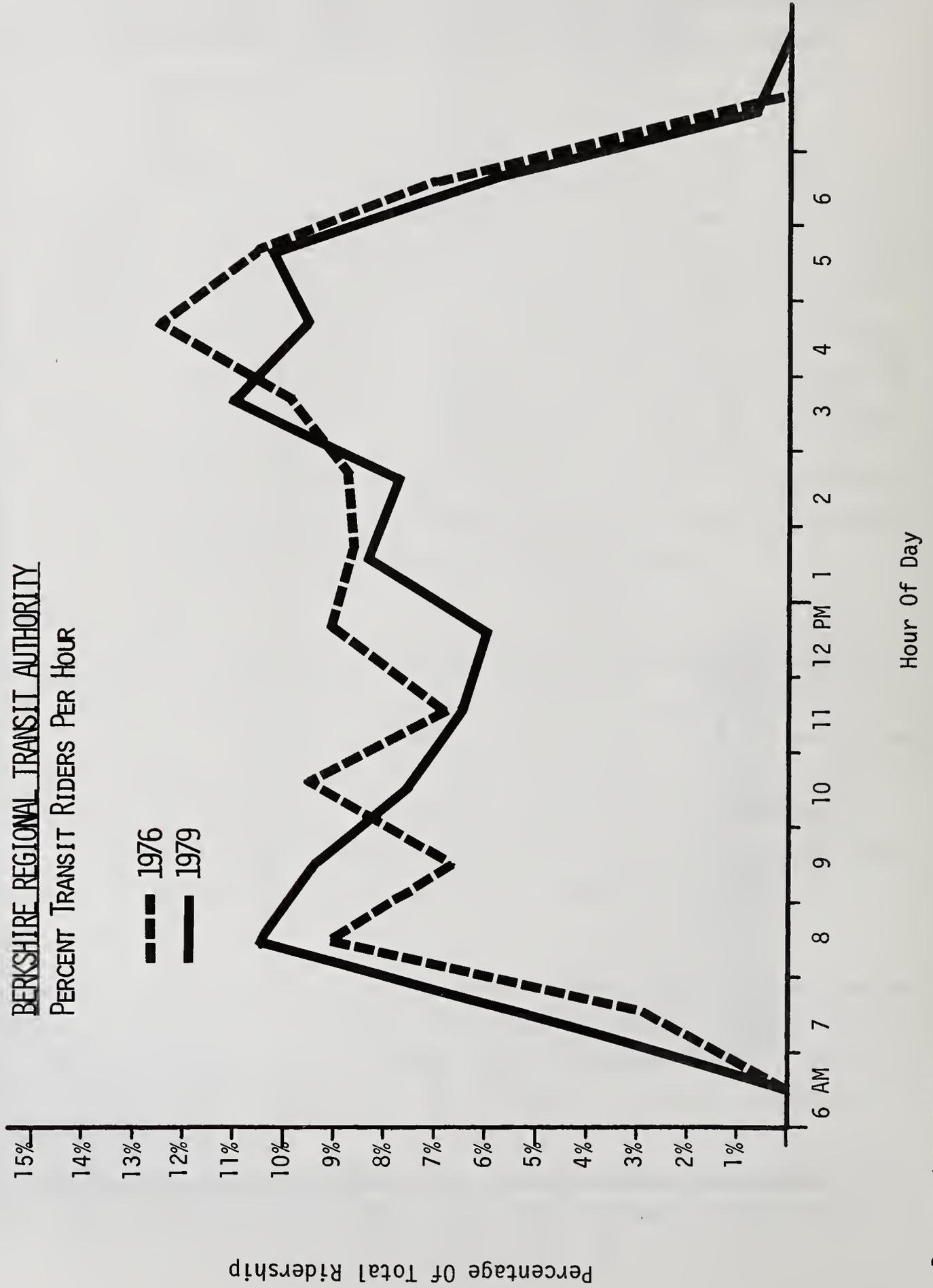
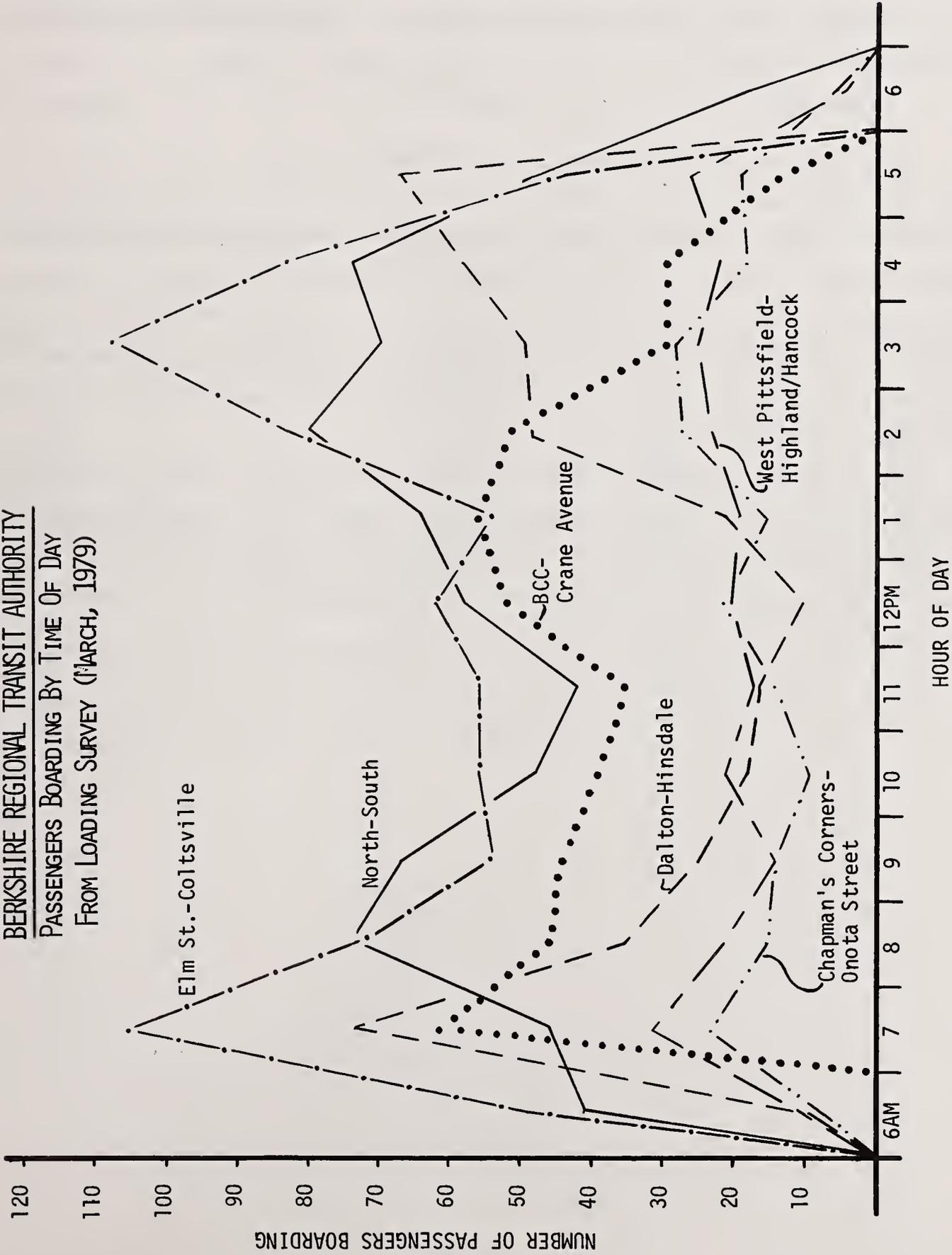


FIGURE 4

BERKSHIRE REGIONAL TRANSIT AUTHORITY
PASSENGERS BOARDING BY TIME OF DAY
FROM LOADING SURVEY (MARCH, 1979)



direct access to G. E. While the Dalton-Hinsdale Route directly connects with G.E., the same absence of the 7:00 a.m. peak hour is noted, due perhaps to the poor timing (7:35 a.m. arrival) for the important 8:00 a.m. shift at G.E. The 7:00 a.m. peak hour is also somewhat subdued on the West Pittsfield and Holmes Road Routes, again perhaps resulting from the lack of direct access to G.E. However, the BCC bus does have a 7:00 a.m. peak hour due to students commuting to the college.

2.1.4 TRANSFERS:

Transfers during FY'79 amounted to 44,335 rides which was 6.7% of the total 662,506 fixed route passengers. The Elm Street Route attracted 27% of all transfers with the majority about equally from the North-South and West Street Routes. Only 8.5% of the transfers were made with the Dalton-Hinsdale Route which had the least amount of transfers. The West Street Route serving Berkshire Community College (BCC) had the greatest amount of transfer activity as a percent of route ridership with transfers to the route being 12.3% of all fare-paying passengers.

A look at the scheduled arrival and departure times at Park Square during peak hours shows that the wait between buses ranges from 0 to 55 minutes with an average wait of 21 minutes in one direction. An analysis of the transfer data did not reveal any noticeable correlation between wait time and the number of transfers.

2.1.5 RIDERSHIP FREQUENCY:

Although the average daily ridership for FY'79 was 2,568 for the fixed route service, this should not imply that only 1,284 people use the buses. A question on the previous on-board survey (11-17-76) asked riders how frequently they used the buses. Assuming the responses to this question continue to hold, we can estimate the number of users on an annual basis. The data in Table 3 shows that about 4,516 people used the fixed route service in FY'79.

TABLE 3: ESTIMATED USERS - FY '79

<u>Frequency</u>	<u>% Trips</u>	<u>Trips</u>	<u>Trips/Person*</u>	<u>Person</u>
A. Daily	47.8%	316,678	506	626
B. 2-3/Week	35.1%	232,540	260	894
C. 1/Week	8.9%	58,963	104	567
D. 2/Month	4.4%	29,150	48	607
E. 1/Month	1.0%	6,625	24	276
F. Less than 1/Month	2.8%	18,550	12	1,546
	100.0%	662,506	-	4,516

* 253 days of operation over 52 weeks and 12 months; a single "Use" of the bus implies one round trip consisting of two one-way "trips"

Source of frequency estimates: 11-17-76 On-Board Survey

2.1.6 SERVICE COVERAGE:

Of interest is the degree to which the transit service is available to the residents of the area and particularly whether those most likely to use the service can do so. The area within $\frac{1}{4}$ mile of the current fixed routes is shown within the solid lines on the following composite route map (Figure 5). An enlargement of the same routes in Pittsfield also follows (Figure 6). These composite route maps can be used to gauge the spatial coverage provided by the fixed route service, and can be compared to the spatial distribution of the population as illustrated by the following dot maps.

As can be seen, most of the bus service is concentrated in Pittsfield as is the population. At the present time, most of the population has access to the buses.

One thing which must not be overlooked is that a route map does not give a complete picture of the availability of service; frequency i.e., the dimension of time must also be considered. Duration of the service, one aspect of the time dimension, is currently from about 6:00 a.m. to 6:00 p.m. on weekdays, and 8:00 a.m. to 6:00 p.m. on Saturdays for the fixed route service. The duration of service during the day appears to be adequate for the fixed route service.

FIGURE 5

BERKSHIRE REGIONAL TRANSIT AUTHORITY

FIXED ROUTE COVERAGE
AND

POPULATION DISTRIBUTION

One dot represents 200 people

From 1970 U.S. Census
Journey-to-Work Zone Data

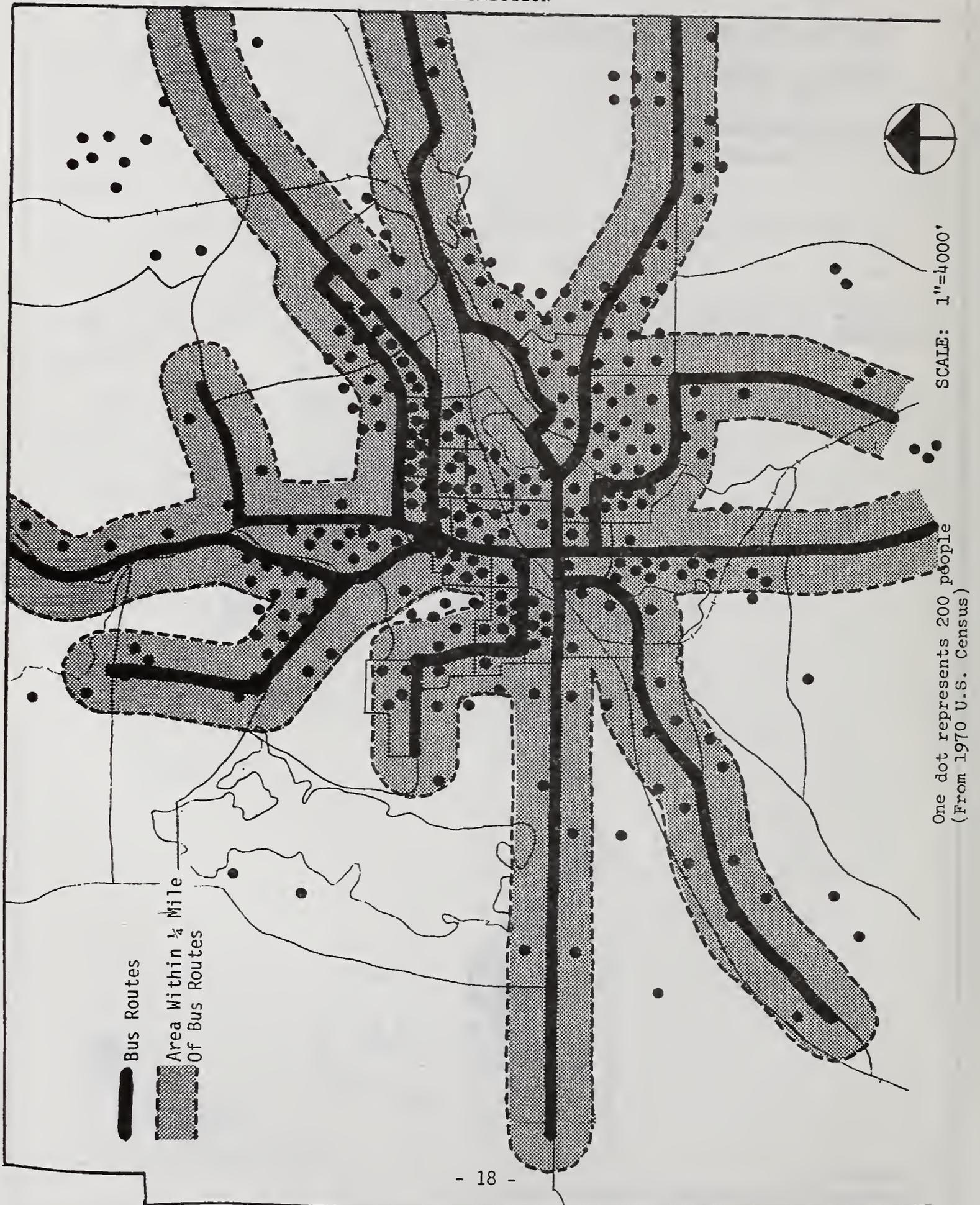
 Area Within ¼ Mile
Of Bus Service



Prepared by
BERKSHIRE COUNTY REGIONAL PLANNING COMMISSION

PITTSFIELD JOURNEY-TO-WORK ZONES

POPULATION DISTRIBUTION



2.1.7 AVERAGE TRIP LENGTH:

The average trip length is a very useful indication of the type of travel on any route or system. The following table shows the average trip length for each route as calculated from the March, 1979 Loading Survey. The trip lengths range from 1.6 miles to 5.5 miles with an average of 3.6 miles for the entire system. These are similar to the average trip lengths from the November, 1976 survey as shown.

TABLE 4

BRTA FIXED ROUTES: AVERAGE TRIP LENGTHS

<u>Route</u>	<u>(1) Passengers</u>	<u>Transfers</u>	<u>Total Trips</u>	<u>Passenger Miles Of Travel (PMT)</u>	<u>1979 Average Trip Length</u>	<u>1976 Average Trip Length</u>
Elm Street	203,199	13,875	217,074	499,270	2.3	2.0
Dalton-Hinsdale	99,489	4,141	103,630	538,876	5.2	5.3
North-South	184,702	10,307	195,009	1,072,550	5.5	6.1
West St.	73,380	8,851	82,231	238,470	2.9	-
W. Housatonic	53,649	3,852	57,501	138,002	2.4	-
Onota St.	<u>48,087</u>	<u>3,309</u>	<u>51,396</u>	<u>82,234</u>	<u>1.6</u>	<u>-</u>
TOTAL	662,506	44,335	706,841	2,569,402	3.6	3.8

(1) Paid Fares

2.2 Elderly & Handicapped (E&H) Services

In addition to regular fixed route transit buses, the BRTA also provides other services in keeping with UMTA regulations requiring special efforts to make transit service accessible to those with special needs, namely the elderly and handicapped. Not only are there half fares on the fixed route buses which are also equipped with a kneeling feature, but the BRTA provides the E&H both free vans and a user-side subsidy for taxicabs and private chaircar operators.

2.2.1 UNCLE JOHN'S VANS

Uncle John's Vans is a non-profit agency which operates a dial-a-ride van service for the elderly and handicapped in Berkshire County. The service operates weekdays between 8:00 a.m. and 4:00 p.m., with 24 hours notice required.

The BRTA funds three of these vans in the BRTA area in accordance with the following schedule. In addition, a ramp-equipped van is available on an as-needed basis and a spare van is used part time to accommodate any excess demand.

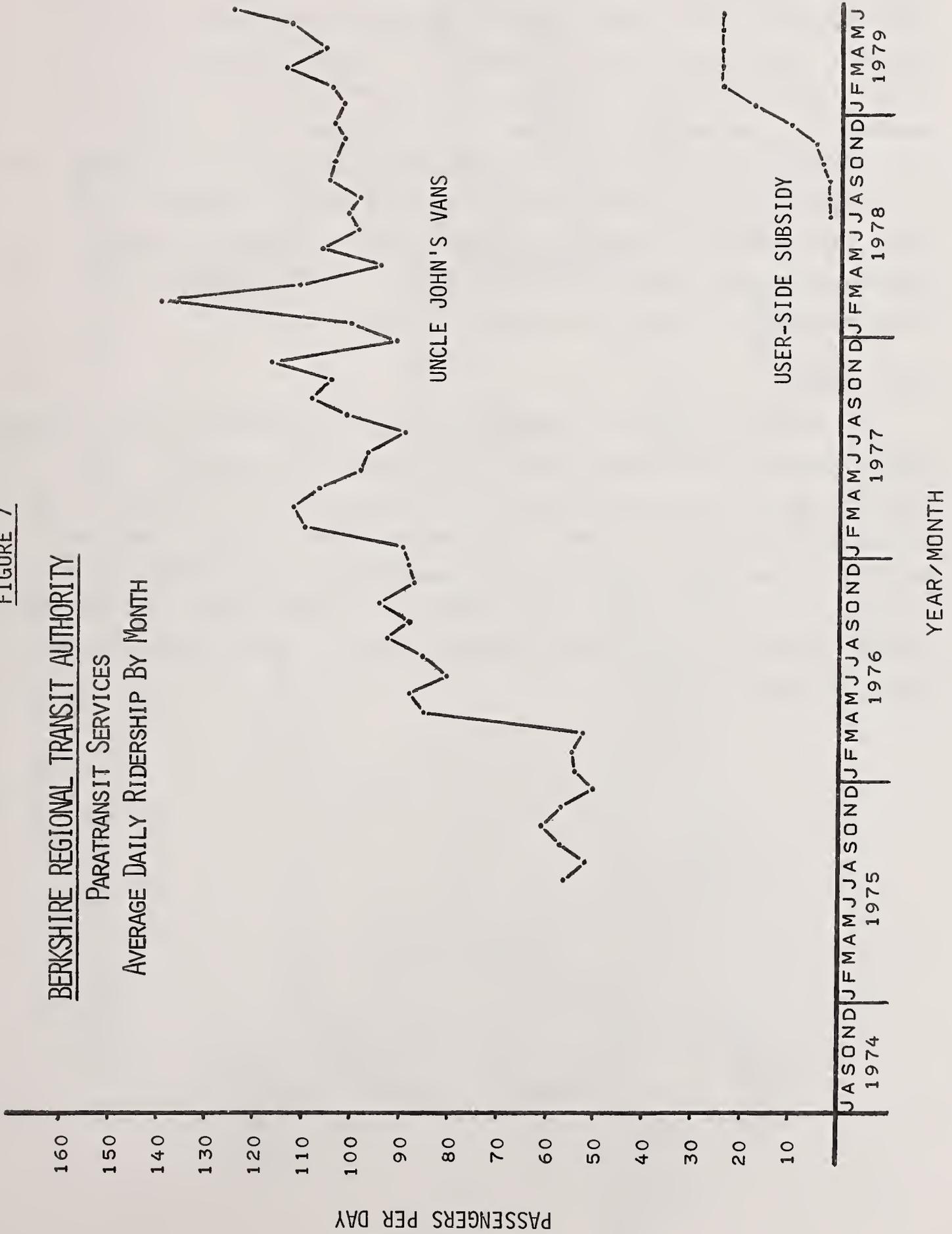
Recent ridership trends are shown on the following graph with an average daily ridership of 106 for FY '79.

	<u>MON.</u>	<u>TUE.</u>	<u>WED.</u>	<u>THUR.</u>	<u>FRI.</u>
Pittsfield	Yes	Yes	Yes	Yes	Yes
Dalton	-	Yes	-	Yes	-
Lanesboro	-	Yes	Yes	*	-
Lenox	Yes	-	Yes	-	Yes
Lee	Yes	*	-	Yes	Yes

* Spare van used for nutrition sites only.
Ramp van is available for those in wheelchairs.

FIGURE 7

BERKSHIRE REGIONAL TRANSIT AUTHORITY
 PARATRANSIT SERVICES
 AVERAGE DAILY RIDERSHIP BY MONTH



2.2.2 USER-SIDE SUBSIDY

The BRTA also offers reduced fare tickets for the elderly & handicapped for use with local taxi-cabs and private chaircar operators. This service consists of half fare tickets which are available through social service agencies. The various agencies purchase the tickets from the BRTA for half price. The agencies then distribute them to their eligible clients in accordance with the agency's policies. The client then uses the tickets to pay the fare to local taxi-cabs or private chaircar operators as appropriate. The private owners then redeem the tickets with the BRTA for their full value. This service is available 24 hours per day, seven days a week. The program was begun in July of 1978, and is still in its formative stages. The user-side subsidy ridership can be seen in Figure 7.

2.3 Finances

The financial aspects of the BRTA services are displayed in the following figures and detailed financial data is contained in the appendix. These diagrams indicate the relative costs for various aspects of the service as well as the sources of revenues. As a general rule of thumb in the transit industry, driver labor costs should be expected to be approximately equal to revenues. In FY '79, revenues were within 10% of driver labor costs as can be seen in Figures 8 and 9. Local costs by community for the fixed routes are shown on Table 6.

FIGURE 8

BRTA CAPITAL & OPERATING COSTS

FY '79 - JULY 1, 1978 - JUNE 30, 1979

INCOME: \$741,644

EXPENSES: \$818,572

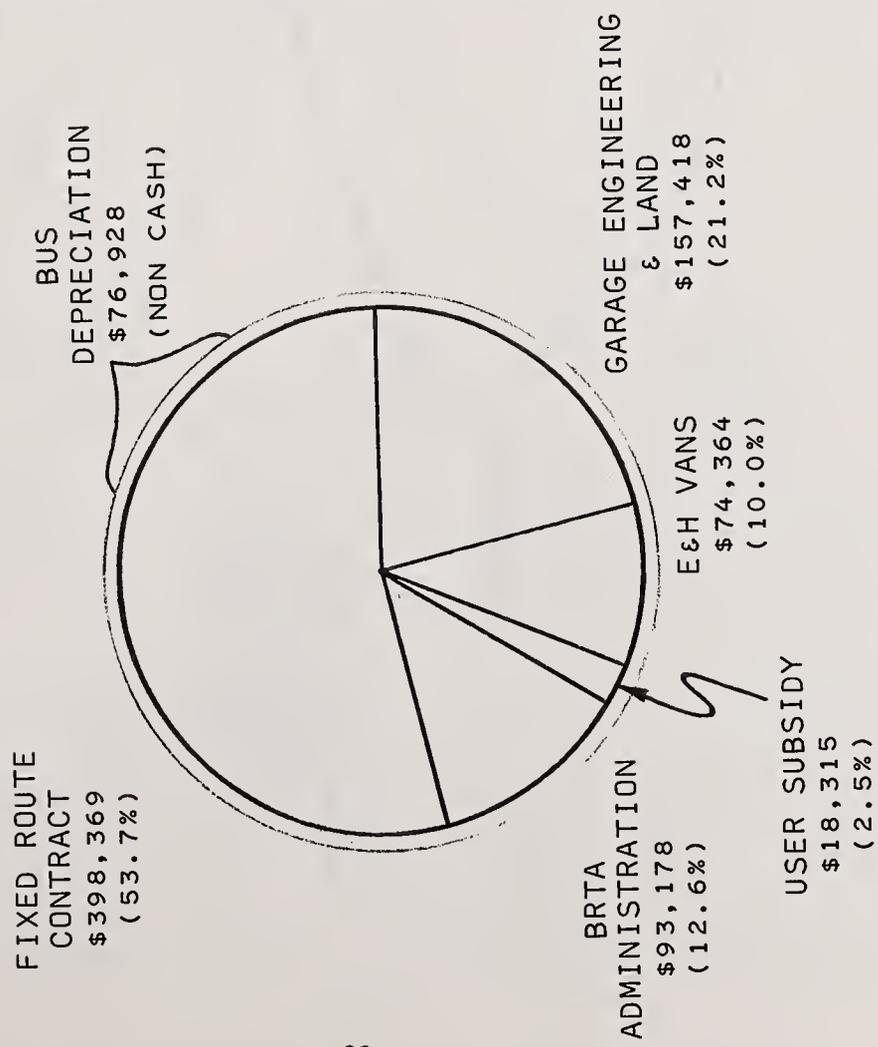
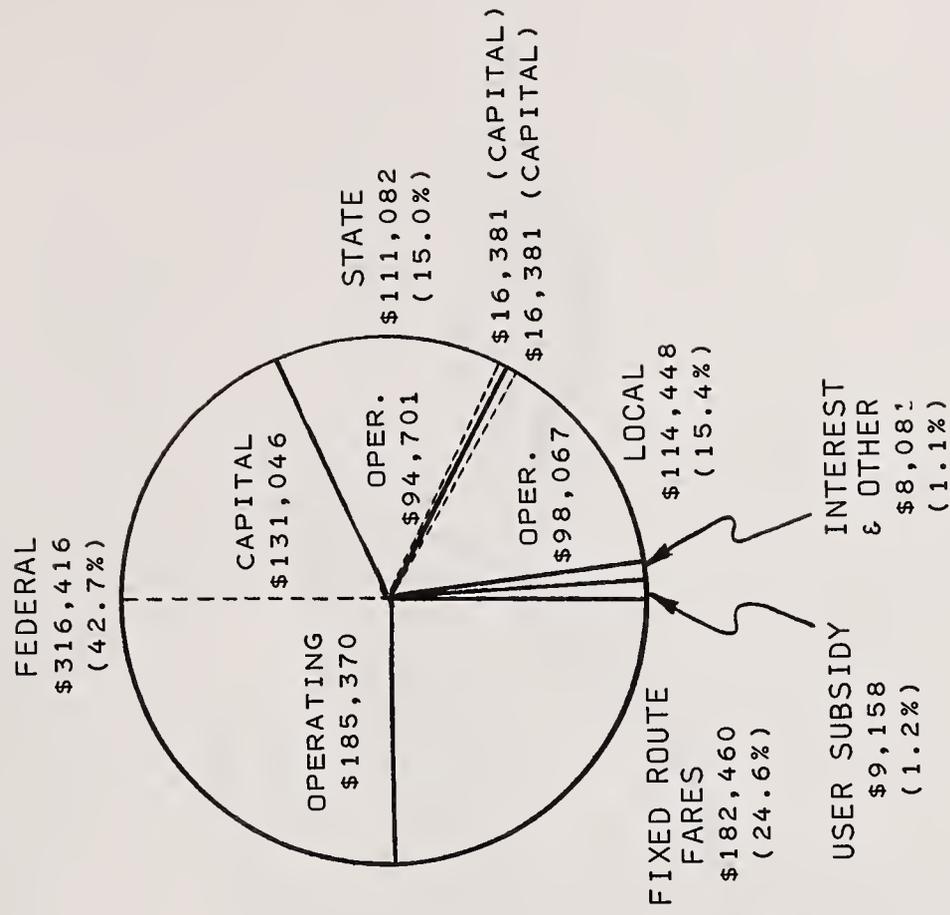


FIGURE 9

FIXED ROUTE CONTRACT COSTS - FY '79

TOTAL = \$398,400

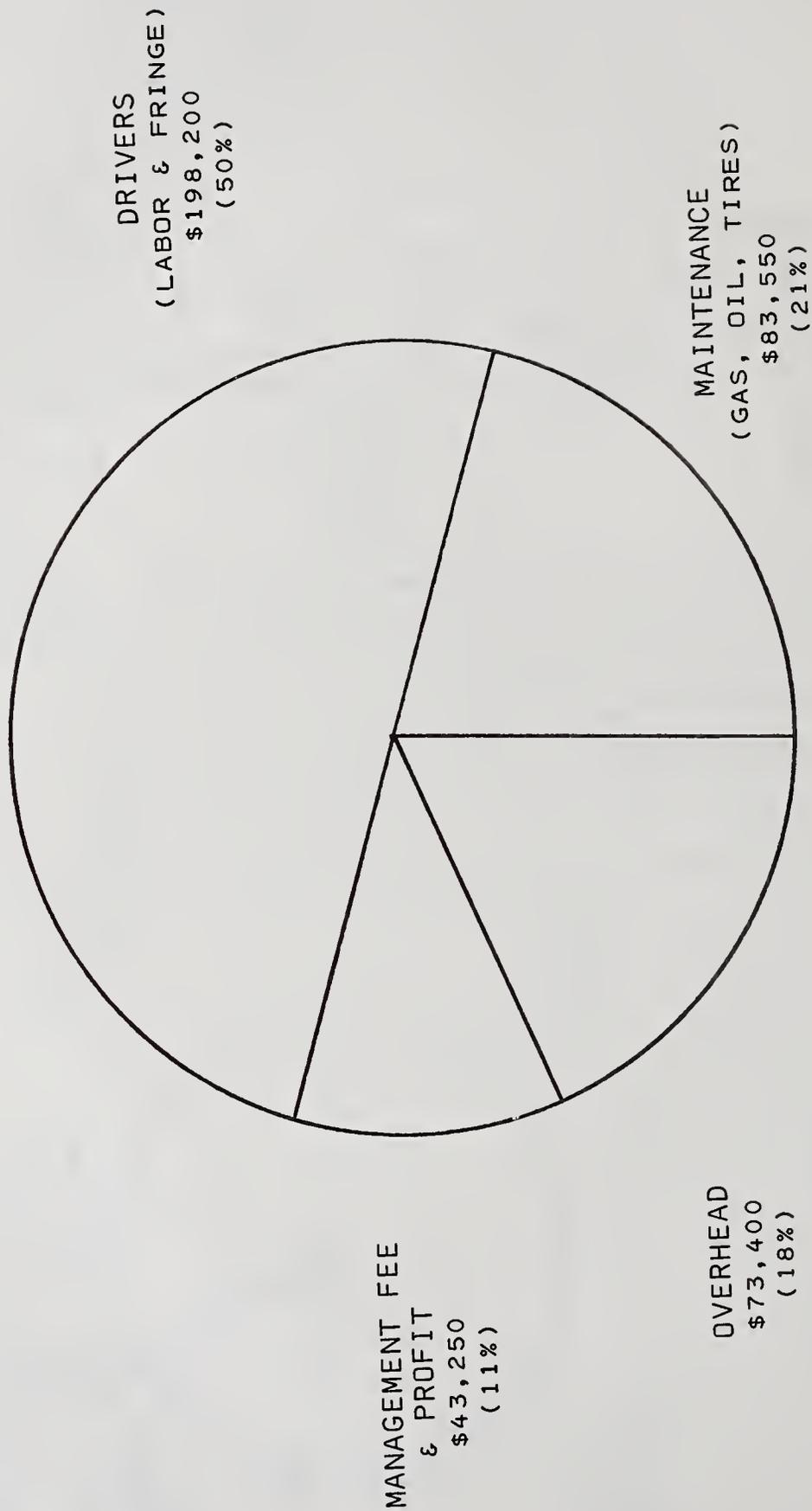
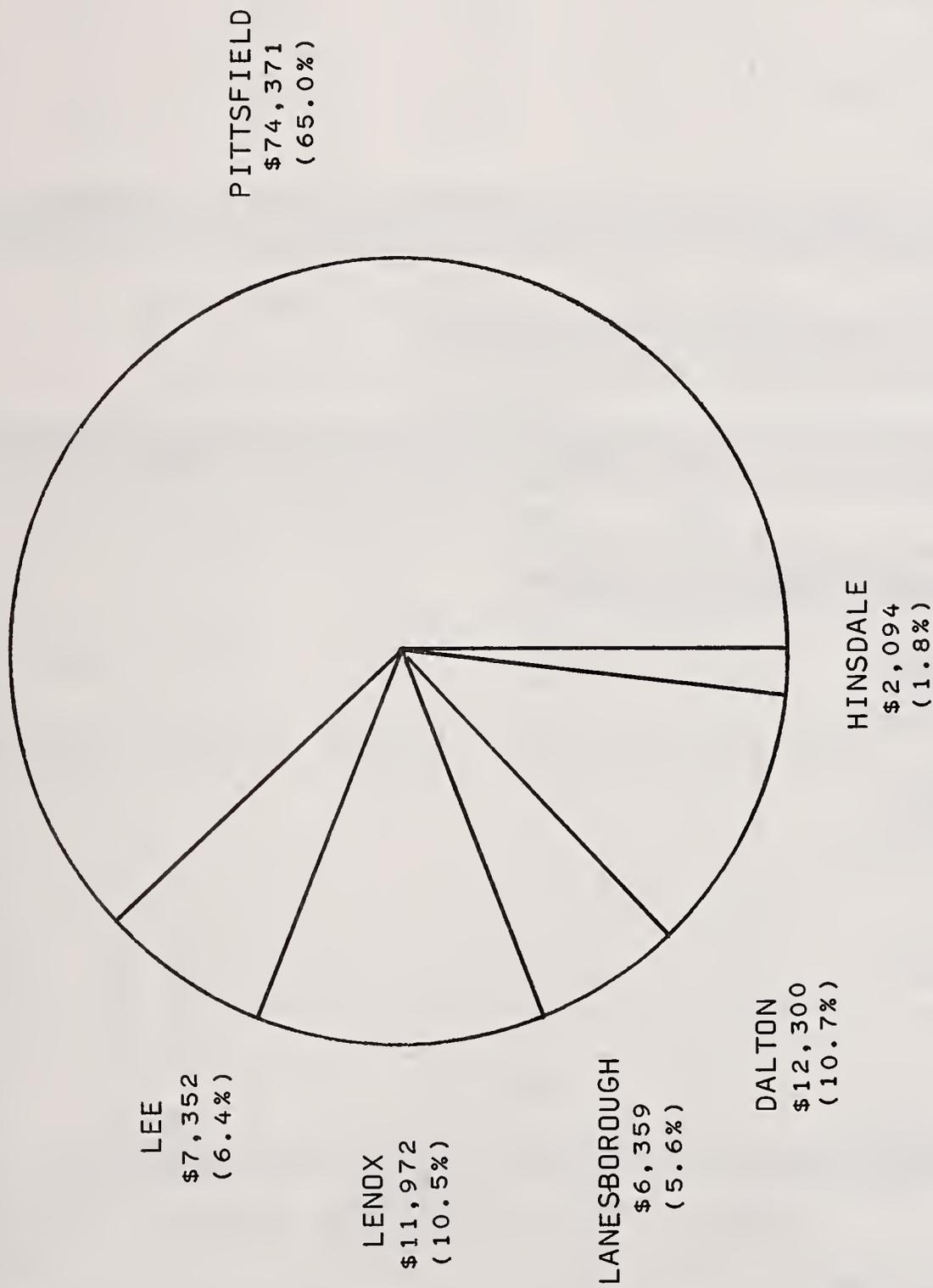


FIGURE 10

LOCAL COSTS - FY '79

TOTAL = \$114,448



<u>TABLE 6A</u>				
DALTON-HINSDALE ROUTE: COMMUNITY RIDERSHIP & OPERATING COSTS				
	<u>PITTSFIELD</u>	<u>DALTON</u>	<u>HINSDALE</u>	<u>TOTAL</u>
# Boarding Per Day	275	97	21	393
# Boarding-FY'79	69,543	24,574	5,372	99,489
Per Cent	69.9%	24.7%	5.4%	100.0%
Local FY'79 Costs	\$ 7,205	\$ 7,172	\$1,674	\$16,051
Per Cent	44.9%	44.7%	10.4%	100.0%
Local Cost Per Ride	10.4¢	29.2¢	31.2¢	16.1¢
Total Public Subsidy	\$.416	\$ 1.168	\$1.248	\$.644

<u>TABLE 6B</u>					
NORTH-SOUTH ROUTE: COMMUNITY RIDERSHIP & OPERATING COSTS					
	<u>LEE</u>	<u>LENOX</u>	<u>PITTSFIELD</u>	<u>LANESBORO</u>	<u>TOTAL</u>
# Boarding Per Day	136	141	427	26	730
# Boarding-FY'79	34,355	35,647	108,051	6,649	184,702
Per Cent	18.6%	19.3%	58.5%	3.6%	100.0%
Local FY'79 Costs	\$ 2,262	\$ 6,155	\$ 2,239	\$ 2,306	\$12,962
Per Cent	17.5%	47.5%	17.3%	17.8%	100.0%
Local Cost Per Ride	\$.066	\$.173	\$.021	\$.347	\$.07
Total Public Subsidy	\$.264	\$.692	\$.084	\$ 1.388	\$.28

<u>TABLE 6C</u>					
PITTSFIELD IN CITY ROUTES: RIDERSHIP & OPERATING COSTS					
	<u>ELM ST.</u>	<u>B.C.C.</u>	<u>WEST HOUSATONIC</u>	<u>HOLMES RD.</u>	<u>TOTAL</u>
# Boarding Per Day	803	290	212	190	1,495
# Boarding-FY'79	203,199	73,380	53,649	48,087	378,315
Local FY'79 Costs	\$11,200	\$6,554	\$9,373	\$9,285	\$36,412
Local Cost Per Ride	\$.055	\$.089	\$.175	\$.193	\$.096
Total Public Subsidy	\$.220	\$.356	\$.700	\$.772	\$.38

FIGURE 11

BERKSHIRE REGIONAL TRANSIT AUTHORITY
GROSS COST PER PASSENGER - FY '79

\$24.34 Total
 -7.40 Avg. Fare

 \$16.94 Net Cost

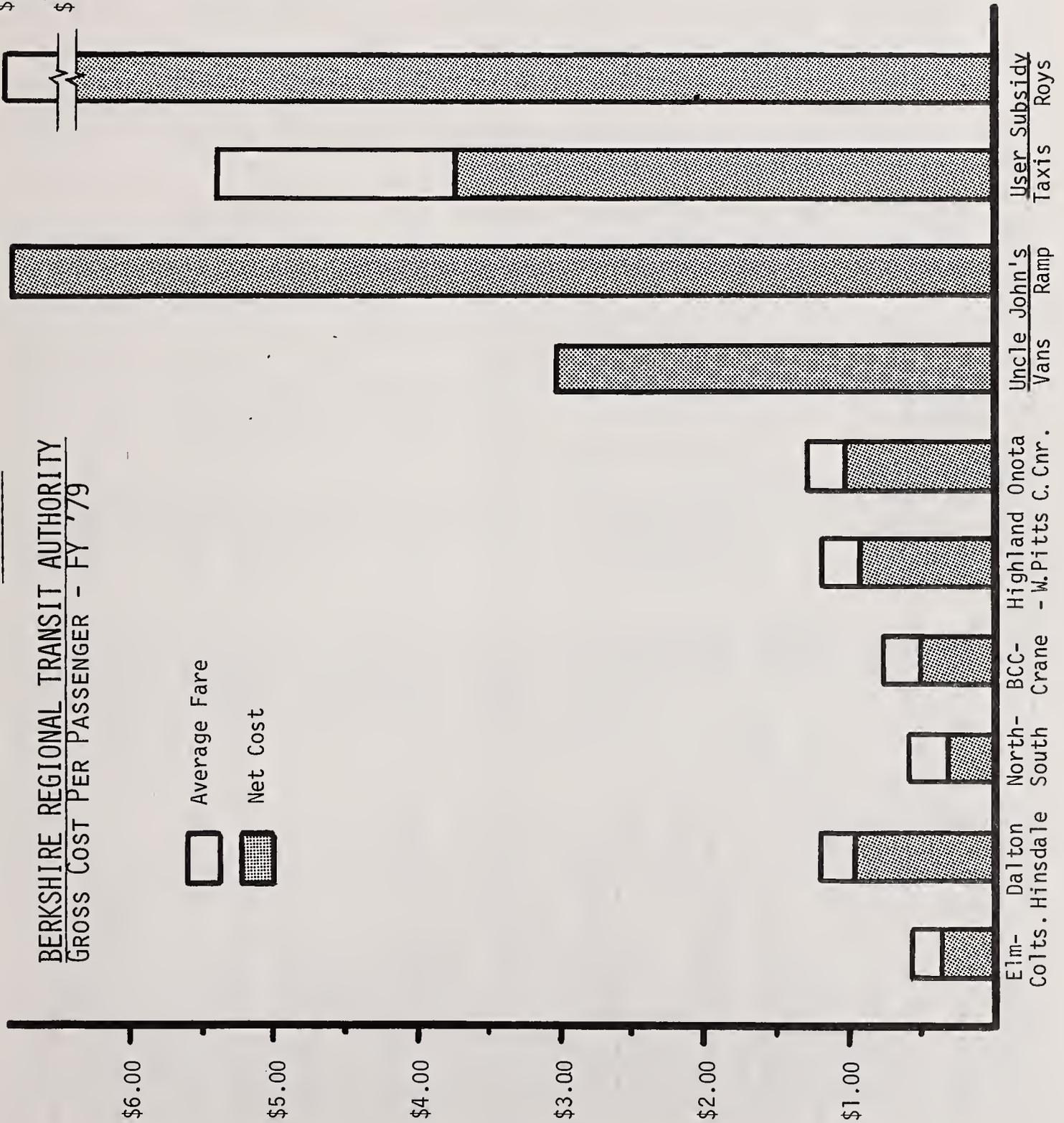


TABLE 7A

BRTA OPERATIONS-FY 1979	UNCLE JOHN'S VANS		USER-SIDE SUBSIDY		SUBTOTAL E&H SERVICES	FIXED-ROUTE BUSES	GRAND TOTAL BRTA SERVICES
	VANS	RAMP	TAXIS	ROY'S			
1. Passengers	25,986	953	4,703	197	31,839	662,506	694,345
2. % Transfers	-	-	-	-	-	6.8%	6.8%
3. Revenue Hours	6,519	469	-	-	6,988	27,032	-
4. Revenue Miles	51,972	1,906	-	-	-	415,918	-
5. Revenues	-	-	\$ 7,700	\$ 1,458	\$ 9,158	\$181,788	\$190,946
6. Contract Costs	\$69,373	\$ 4,991	\$15,400	\$ 2,915	\$ 92,679	\$395,901	\$488,580
7. Total Costs	\$80,376	\$ 6,546	\$25,316	\$ 4,794	\$117,032	\$548,901	\$655,933
8. Net Cost	\$80,376	\$ 6,546	\$17,616	\$ 3,336	\$107,874	\$367,113	\$474,987
9. Passengers/Hour	4.0	2.0	-	-	6.0	24.5	-
10. Passengers/Mile	0.5	0.5	-	-	-	1.6	-
11. Miles/Hour	8.0	4.0	-	-	-	15.4	-
12. Contract Cost/Hour	\$10.64	\$10.64	-	-	-	\$ 14.65	-
13. Contract Cost/Mile	\$ 1.33	\$ 2.62	-	-	-	\$.95	-
14. Contr. Cost/Pass.	\$ 2.67	\$ 5.24	\$ 3.27	\$14.80	\$ 2.91	\$.60	\$.704
15. Total Cost/Hour	\$12.33	\$13.96	-	-	-	\$ 20.30	-
16. Total Cost/Mile	\$ 1.55	\$ 3.43	-	-	-	\$ 1.32	-
17. Total Cost/Pass.	\$ 3.09	\$ 6.87	\$ 5.38	\$24.34	\$ 3.68	\$.829	\$.959
18. Revenues/Passenger	0	0	\$ 1.64	\$ 7.40	\$.288	\$.274	\$.275
19. Subsidy/Passenger	\$ 3.09	\$ 6.87	\$ 3.75	\$16.94	\$ 3.39	\$.555	\$.684
20. Revenues/Cost	0.0%	0.0%	30.4%	30.4%	7.8%	33.1%	28.7%
21. Avg. Trip Length (Miles)	-	-	2.9	-	-	3.6	-
22. PMT=Passenger Miles of Travel	-	-	13,629	-	-	2,571,721	-
23. % Utilization	-	-	100.0%	-	-	18.7%	-

TABLE 7B

BRTA OPERATIONS - FY 1979 FIXED ROUTES	Elm Street	Dalton Hinsdale	North South	West Street	West Housatonic	Holmes Road	Total Services
1. Passengers	203,199	99,489	184,702	73,380	53,649	48,087	662,506
2. % Transfers	7.0%	4.1%	5.7%	12.3%	7.2%	7.0%	6.8%
3. Revenue Hours	5,885	5,854	6,245	2,805	3,170	3,073	27,032
4. Revenue Miles	80,940	92,888	120,329	35,028	47,798	38,935	415,918
5. Revenues	\$ 53,860	\$ 27,654	\$ 52,845	\$ 20,231	\$ 14,422	\$ 12,776	\$181,788
6. Contract Costs	85,911	85,910	91,453	41,174	46,320	45,133	\$395,901
7. Total Costs (1)	119,112	119,111	126,796	57,086	64,221	62,575	\$548,901
8. Net Cost (2)	65,252	91,457	73,951	36,855	49,799	49,799	\$367,113
9. Passengers/Hour	34.5	17.0	29.6	26.2	16.9	15.6	24.5
10. Passengers/Mile	2.5	1.1	1.5	2.1	1.1	1.2	1.6
11. Miles/Hour	13.8	15.9	19.3	12.5	15.1	12.7	15.4
12. Contract Cost/Hour	\$ 14.65	\$ 14.65	\$ 14.65	\$ 14.65	\$ 14.65	\$ 14.65	\$ 14.65
13. Contract Cost/Mile	\$ 1.06	\$.92	\$.76	\$ 1.18	\$.97	\$ 1.16	\$.95
14. Contract Cost/Passenger	\$.423	\$.860	\$.495	\$.561	\$.863	\$.939	\$.60
15. Total Cost/Hour	\$ 20.30	\$ 20.30	\$ 20.30	\$ 20.30	\$ 20.30	\$ 20.30	\$ 20.30
16. Total Cost/Mile	\$ 1.47	\$ 1.28	\$ 1.05	\$ 1.63	\$ 1.34	\$ 1.61	\$ 1.32
17. Total Cost/Passenger	.586	\$ 1.200	.686	.778	\$ 1.197	\$ 1.30	.829
18. Revenues/Passenger	\$.265	\$.278	\$.286	\$.276	\$.269	\$.267	\$.274
19. Subsidy/Passenger	\$.321	\$.922	\$.400	\$.502	\$.928	\$ 1.036	\$.555
20. Revenues/Cost	.452	.232	.417	.354	.225	.204	33.1%
21. Average Trip Length (Miles)	2.3	5.2	5.5	2.9	2.4	1.6	3.6
22. PMT=Passenger Miles of Travel	500,072	538,554	1,073,765	238,977	138,028	82,325	2,571,721
23. % Utilization (3)	18.7%	17.6%	27.0%	20.7%	8.8%	6.4%	18.7%

(1) Assumes 70% of BRTA expenses plus bus depreciation over 10 years plus interest

(2) Total costs less revenues

(3) % utilization = passenger miles of travel (PMT) ÷ total capacity (seat miles)

3.0 EVALUATION OF CURRENT SERVICE

This section of the report consists of an evaluation of various aspects of the transit service such as ridership, routes and schedules, energy, fares, marketing, finances, and so forth. This is done in order to identify any problems or areas with potential for improvement. This evaluation is based upon data available from existing sources and from recent surveys such as the loading survey conducted in March 1979. In addition, information is utilized from observation and informal discussions with bus drivers, users, and others.

3.1 Fixed Routes

3.1.1 PERFORMANCE STANDARDS:

The Massachusetts Executive Office of Transportation and Construction (EOTC) has published performance standards and guidelines for measuring the effectiveness of service as well as comparative costs and performance indicators for all of the other Regional Transportation Authorities (RTA's). The data in Table 7B gives performance indicators for each route for FY '79.

The EOTC performance standards specify a minimum ratio of revenues to cost of .20 or more for fixed route service. The system, as a whole, easily meets this standard with a .331 ratio as do all the routes individually.

The EOTC also specifies a minimum average of 1.5 passengers per mile and 15 passengers per hour, which implies an average overall speed of 10 mph. Since the average speed for the BRTA system is 15.4 mph., the per mile standard is exceeded only on the Elm & West Street routes. However, the per hour standard is easily attained by the system as a whole, as well as by each individual route.

The EOTC standards for costs per bus hour for areas with populations under 250,000 are \$13.41 to \$16.82 for 1974. Assuming a 36% factor since then for inflation, these costs would be \$20.06 to \$25.16 for FY '79. The overall bus-hour cost of the BRTA system was within the standard at \$20.30 per hour.

Likewise, the cost per mile is given as \$.94 to \$1.11 which becomes \$1.40 to \$1.66 with a 36% inflation factor. At \$1.32, the system is below the standard due to the higher average speed.

3.1.2 ROUTES AND SCHEDULES:

In conducting the evaluation of the BRTA transit routes and schedules, a number of "problems" have been revealed which lend themselves to solutions resulting in improved transit service. This section will itemize such problems and identify alternative improvements to alleviate those problems.

3.1.2.1 Principles For Fixed Route Service

Recognizing that fixed route service must be appealing to the user in order to be effective, this study has attempted to focus on service from the rider's point of view realizing the necessity of balancing that viewpoint with certain practical realities, most notably the limit on public funds available for mass transit.

A number of assumptions have been made as to certain basic principles of transit which form the basis of effective service. While it is recognized that in the real world such principles may ultimately need to be compromised, they are set forth here as a base from which to evaluate and develop improvements to the current service.

1. The transit dependent (poor, young, elderly, handicapped) form the primary market for transit service and choice riders form a secondary market.

2. The most productive areas for ridership will be those neighborhoods with greater numbers and higher densities of population.

3. The primary destination for transit users will be the Pittsfield CBD focusing on Park Square and extending up North Street to the Berkshire Medical Center. Secondary destinations will be General Electric and Berkshire Community College.

4. The priority trip during peak hours is the work trip followed by school trips; during off-peak hours, it is the shopping trip followed by health, personal, business, and social trips.

5. Bus riders can expect to pick up a bus within a 1/4 mile walk from their homes and be let off within 1/8 of a mile from their destination.

6. Buses should run as directly as possible to major destinations in order to minimize travel times and to avoid the necessity for transfers.

7. Bus routes should be two-way (cover the route in both directions) and should avoid or minimize branches off the main route or large one-way loops at either end of the route.

8. Buses should consistently traverse the same route each trip as much as possible to aid rider comprehension and utilization of the service.

9. Buses should be scheduled to consistently run at the same time each hour to facilitate the users understanding of the schedule without the necessity of having to constantly read a schedule. If it is necessary to shift the schedule, this should be done at the end of the line, around noon, so that the bus runs at the same time in the morning and the same time in the afternoon.

10. Buses should be scheduled to meet the commuting times for the 8:00 to 5:00 shift at G.E., and the 9:00 to 5:00 CBD work shifts, and the CBD store hours from 9:30 to 5:30.

11. Buses should operate at a minimum frequency of one-hour headways with 30 minute headways being more desirable where warranted.

12. Efforts to improve service should focus on increased frequencies along established routes rather than expansion of coverage into areas of marginal productivity.

13. Where routes overlap, schedules should be coordinated to provide better headways by staggering the buses so they are evenly spaced along the overlapped route.

14. Modifications to existing service should be done carefully and in progressive steps in order to maintain confidence in the stability of the service and to facilitate the evaluation of the effectiveness of the changes.

15. Major service changes should be the subject of a public hearing if appropriate, and adequate notice provided to allow riders to adjust to the changes.

16. Any service which does not operate efficiently from an economic or technical standpoint, should be evaluated in terms of any overriding social benefits before being abandoned.

3.1.2.2 Problems

While the current fixed route service provides fairly good coverage of the transit market, coordination of the schedules could be accomplished to facilitate transfers by allowing all the buses to simultaneously converge at a common point in a central location. However, this would require a fairly large area along the curb or in an off-street lot which would replace parking that is already in short supply downtown. In addition, since the legs of the different routes are not all the same length, good coordination in one direction results in poor coordination in the other direction. This situation could be alleviated by making changes in the length of the route legs so they would be more equal. However, this would affect coverage adversely where routes were shortened and is generally not feasible. Since the buses directly serve the major destinations in the CBD, the necessity for transfers is minimized, with the exception of trips to G.E. from the new routes. Another exception to this is the bus serving BCC which does necessitate transfers and must, therefore, be coordinated where possible.

Another method of coordinating schedules would be to stagger the schedules of those buses which run on North Street in the CBD so that, in effect, a downtown shuttle service is provided on short headways rather than all buses traversing North Street at the same time. Unequal leg lengths present similar problems here, although to a lesser extent than for transfers. Where schedules cannot be easily coordinated for transfers to BCC, they could be staggered to provide better headways on North Street. However, this could only be done during the off-peak hours and would tend to disrupt any hourly uniformity in the schedule and considerable bus time may be lost when the buses must sit and wait to make the schedule change at both ends of the day to accommodate specific work shifts.

Basically schedules should be aimed at the 8:00 to 5:00 G.E. shifts, the 9:00 to 5:00 CBD work shifts, the 9:30 to 5:30 CBD store hours, and the hourly classes at BCC from 8:00 to 5:00, in that order of priority. A number of shifts at G.E. and in the CBD will not easily be accommodated. However, these are of lesser importance than the above and could be more easily accommodated by changes in the work shift to coordinate with the buses rather than vice versa.

3.1.2.2.1 Elm Street Route

The Elm Street route has been the best performing route in the system and, consequently, has had few operating difficulties. During FY '79, increasing ridership and local traffic congestion resulted in slower running speeds on the Elm Street route and the schedule could not be met later in the day, particularly on Thursdays and Fridays. At a joint meeting of the operator, drivers, BRTA and BCRPC staff, these problems were discussed. As a result of that meeting, it was determined that routing the bus into the Allendale Shopping Center via Crane Ave. rather than Cheshire Road would avoid one traffic light and thus save enough time to stay on schedule. This modification has been made and is operating successfully.

Another problem attributed to the Elm Street route is that the line ends at Mountain Drive about 1/2 mile from the April Lane Apartments. Unfortunately, there is not enough time in the present schedule to meet this demand. Therefore, the schedule would have to be adjusted in order to go to the April Lane Apartments.

This could be done by shifting the schedule by four minutes so that the bus which normally terminates at the State Police Barracks with ten minutes layover time would use some of this time to go to the apartments every hour, thereby leaving six minutes of layover time. This remaining layover time could still be used to serve G.E. Plastics during peak hours as is presently done.

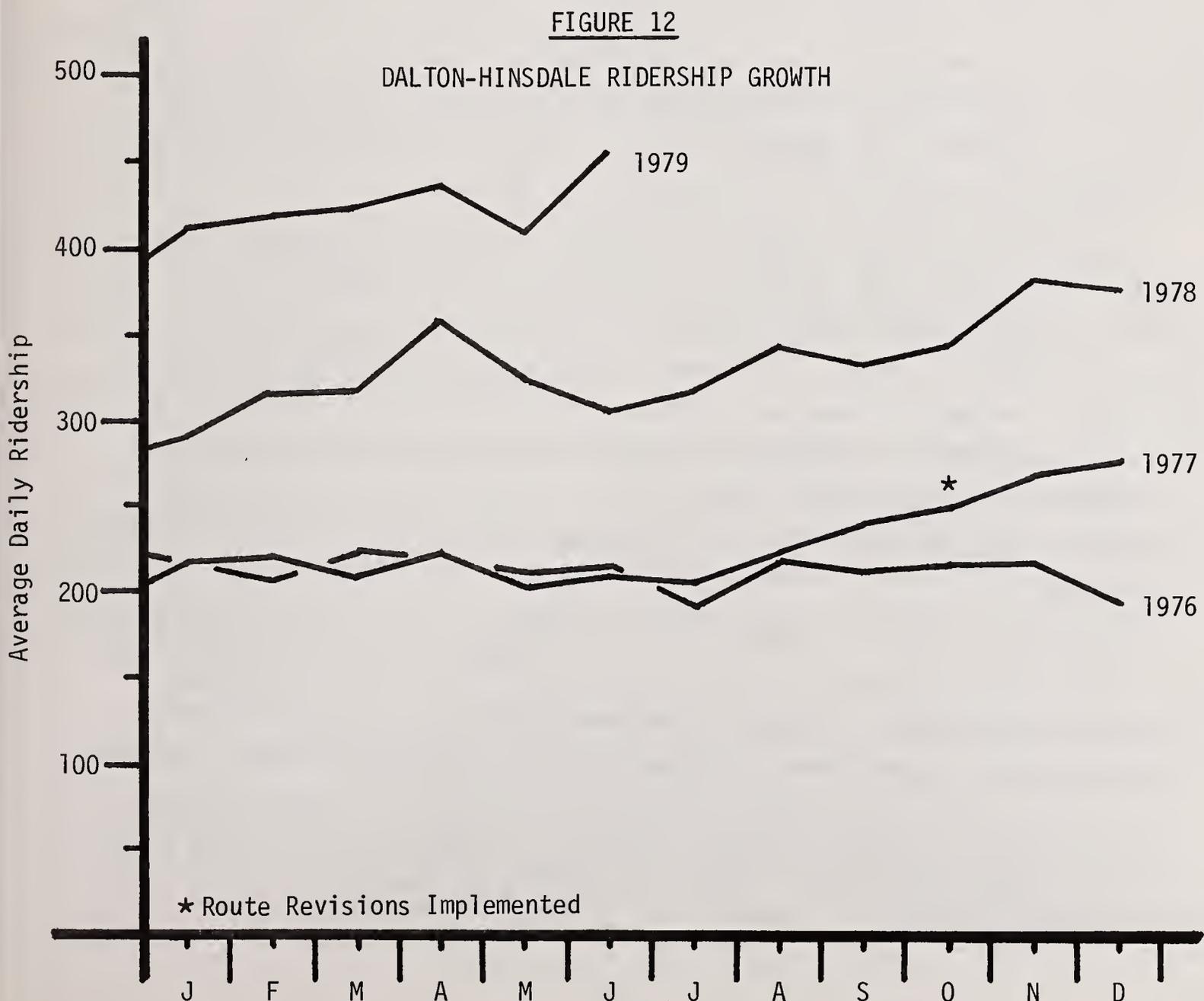
However, this would result in the reduction of peak hour service to Coltsville from half hour to hourly. This may not be critical especially given current policies to support the revitalization of the CBD rather than continuing to allow suburban areas to benefit at the expense of the downtown.

The lost trips to Coltsville would inconvenience about 12 riders per day. The associated change in peak hour service to Mountain Drive from half hour to hourly would affect 28 riders per day. Ridership from April Lane Apartments could be about 18 per day within a range of 13 to 30 based on the recent experience of similar areas served by the system.

3.1.2.2.2 Dalton-Hinsdale Route

The Dalton-Hinsdale Route is the oldest route currently in operation, having a history back to World War II. However, this route has had major route and schedule changes in accordance with the recommendations in the "TDP: Update Report" of May, 1977. As a result of these improvements, ridership has risen dramatically, as shown on the graph below.

As noted in the following section (3.1.2.2.3), the Dalton-Hinsdale route is presently utilizing one of the North-South buses to serve Greenridge Park from the G.E. South Gate at 5:15. If this inequity is eliminated, Greenridge Park would no longer have this service, which would affect about 14 riders per day. However, if it is considered a critical trip, Greenridge Park could be served with the Dalton-Hinsdale bus by turning the bus around at Depot Street in Dalton at 4:36 and heading it back to Park Square for 5:10. While Hinsdale would lose its 4:45 trip, this would only affect 7 riders and is probably a better trade-off than currently exists.



3.1.2.2.3 North-South Route

The North-South Route ridership has continued to increase steadily since its inception in December, 1974. Consequently, this route is now one of the best performing routes in the entire system.

A close examination of the North-South Route reveals several areas which could be improved. One is the lack of direct access to G.E. for commuters. Another is the relatively low ridership in Lanesboro, and the other is the absence of a bus to Lee or Lanesboro for 5:00 workers downtown.

Better access to G.E. could be provided by modifying the schedule to provide for better transfers to buses going to G.E. However, since transfers are undesirable to users, this would not be the best way to deal with the situation if direct access can be provided.

The preferred method of providing access to G.E. is to route the buses directly to G.E. during the early morning and late afternoon peak hours. Fortunately, this can be accomplished by routing the buses to the G.E. North Gate and adjusting the schedule to serve the 8:00 to 5:00 shift. This will require that the buses deadhead back to Lee from Pittsfield between the 7:00 and 8:00 shifts and Lenox Center will be bypassed going southbound at that time (See figure 13). However, the commuters to G.E. should more than offset any loss in ridership from Lenox to Lee at that time in the morning.

The relatively low ridership in Lanesboro (26 boardings per day) is probably due to the lower density of development and the resulting low number of houses served within $\frac{1}{4}$ mile of the route even though the route serves the center of town. This situation could be alleviated by providing additional coverage in Lanesboro, which can be accomplished by branching an extra route segment off the main route to serve the high density development just north of Pontoosuc Lake, (Figure 14). Doing so would add coverage to about 210 houses in addition to the 240 houses now covered, for a 88% increase in coverage.

Current bus miles in Lanesboro are 3.8 per trip. The new branch would add 1.7 bus miles per trip, a 45% increase. At FY'79 costs of \$1.30/bus mile, this would amount to about \$1,740 additional cost per year for the Town of Lanesboro, and increase in costs of 36% for 88% more coverage.

This branch would be served in the southbound direction in the morning and in the northbound direction in the afternoon. While it will result in a five minute diversion for those riders coming from the center of town,

which might tend to discourage some users, the additional coverage provided should more than offset this disadvantage.

Another option here would be to provide service further down Narrangansett Avenue by extending the branch another $\frac{1}{2}$ mile to serve an additional 110 houses. This would require an additional 3 minutes and an additional \$1,023 per year. Thus, the total extended branch would add coverage to 320 houses, an increase in coverage of 133% over the current 240 houses served. This would cost approximately an additional \$2,763 per year, an increase in costs of 57% for 133% more coverage.

Since there may not be enough time to serve both the center of town and an extended branch, a choice could be made between the two. In this case, the bus miles and costs would be the same for either route. However, the Narrangansett Avenue option would provide coverage to about 417 houses, compared to the current route which serves about 240 houses. Therefore, the ridership could be expected to increase from the current 51 trips per day to 125 based on the recent experience of similar areas served by the system.

It has been suggested that the North-South Route should be modified to go by the Lenox High School and to better serve Housatonic and East Streets. This would bring an additional 79 houses within $\frac{1}{4}$ mile of the route, with 19 houses no longer being served, for a net gain of 60 houses. However, the difficulty with making this change is that the bus cannot easily return directly to the center of Lenox because of the narrow roads, hills, and one-way streets in the downtown. Changing the one-way streets to two-way would solve the bus problem, but result in traffic problems.

In order to avoid these problems and to rejoin the existing route in Lenox Center, the bus would have to travel 1.2 miles out of the way in a round-about manner thereby adding about 4 minutes to the current time of 15 minutes, for a total of 19 minutes between Lee and Lenox Center. While this could provide improved local service in Lenox, it would reduce the level of service for riders from Lee and South County.

Currently the 9:00 to 5:00 CBD workers are not well served by the existing North-South schedule, having to wait until 5:40 to return to Lee, an unacceptable wait for most people. In addition, southbound riders are deprived of the standard hourly service during the afternoon peak, having to wait one hour and thirty-nine minutes between buses (4:01 to 5:40). This occurs because the

regular bus is used on the North-South Route at this time in order to serve the Yankee Orchard/Greenridge Park neighborhood with a 5:15 connection to the G.E. South Gate.

This does not seem to be either an efficient operating policy or fair to the people on the North-South route. Therefore, the North-South schedule should be revised to better serve the CBD worker at 5:00 P.M. Any loss in ridership from Yankee Orchard should be easily made up by increased ridership from the much larger market area south of Pittsfield. If the 5:15 bus to Yankee Orchard is considered critical, then the Dalton-Hinsdale schedule should be adjusted to provide that trip as described in 3.1.2.2.2.

These problems can be alleviated with a revised schedule to allow for direct service to G.E. North Gate, better service for the CBD 9:00 - 5:00 worker, and expanded coverage in Lanesboro.

FIGURE 13
ALTERNATE NORTH-SOUTH ROUTE
— ONE-HOUR SERVICE
- - - OCCASSIONAL SERVICE



3.1.2.2.4 West Street Route

The primary purpose of this new route is to serve Berkshire Community College (BCC) at the end of West Street. Because students must commute to BCC, this route is very popular and has become the most successful of the three new routes.

This popularity resulted in a problem on this route, namely overcrowding during the morning peak hour, particularly at the start of semesters. This excess demand could be dealt with in two basic ways, either by accommodating the demand or discouraging the demand.

The demand could be accommodated by adding another full-time bus on that route. This would provide half-hour service to BCC, and would cost about \$43,000 per year gross or a larger bus might be used once the demand has stabilized.

An alternative method would be to provide a peak-hour bus to serve on Monday, Wednesday, and Friday, for two hours each day during the 9 months of the school year. This would only involve \$16,148 additional gross costs which would be a 38% increase in costs for a 7.5% increase in service.

Another method would be to use one of the Uncle John's Vans on a standby basis for one hour per day to accommodate any overflow. This would cost about \$2600 per year and is already included in the BRTA budget. However, the van would be unavailable during this time for the elderly & handicapped.

The excess demand could be discouraged or diverted by allowing the bus to remain crowded--a potential safety hazard. Or, carpooling could be aggressively promoted--potentially the most cost-effective technique. A fare increase would also divert demand. With an elasticity of -0.33, raising the fare from 30¢ to 60¢ (a 100% increase) would decrease passengers by 33% while revenues would increase by 33%.

Fortunately, a decision on this problem can be deferred because this excess demand seems to dissipate after the beginning of the school semester once the students have established a normal routine.

Another problem noted with this route is that G.E. is not served from the West Street area. However, this is unavoidable because the bus cannot be at both BCC and G.E. at the same time. Since BCC is given priority on this route, G.E. cannot be served from West Street under existing conditions.

This problem could be resolved if another bus were added to the route during peak hours. However, this would involve additional gross costs of about \$26,700 per year. Therefore, the gross cost of this route would increase by 62% but only 23% more service would be provided.

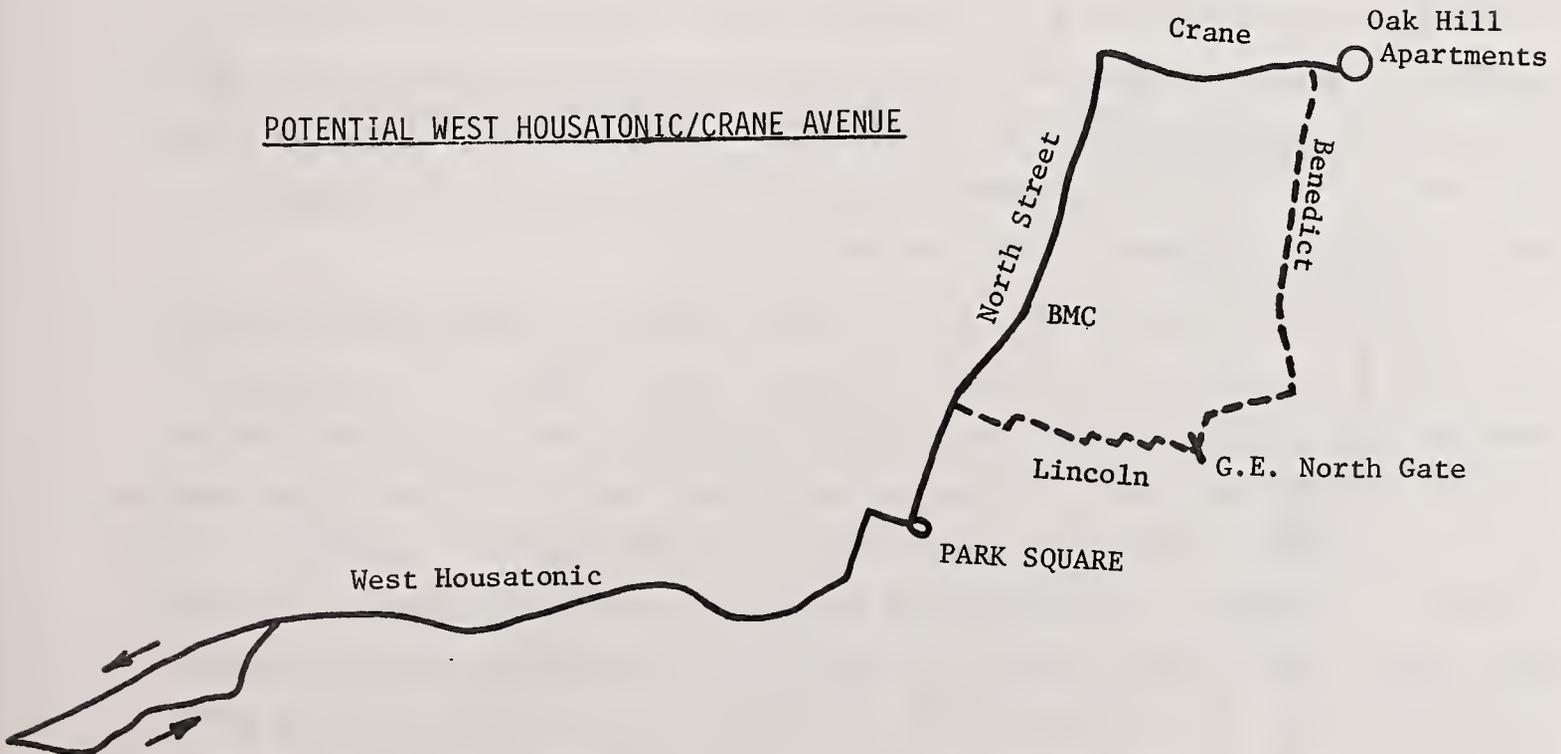
An additional problem associated with this route is the lack of direct service into Hillcrest Hospital which lies about $\frac{1}{2}$ mile off West Street. Diverting the bus to the hospital would require about four minutes per trip or a total of eight additional minutes if both directions (inbound and outbound) are to be served. While this may not seem like much time, it would not leave sufficient time for recovery if this were done with the existing schedule. Another problem here is that most of the users of this route (BCC students) would be taken out of their way since the trip to BCC from Park Square would then take 16 minutes instead of the present 12 minutes, and some transfers could not be made because of the shift in schedule. In addition, Hillcrest presently has its own van which could be used as a shuttle service between West Street and the hospital if necessary. Furthermore, area residents already have bus access to medical facilities and services at the larger Berkshire Medical Center, which is well served by the bus system.

3.1.2.2.5 West Housatonic Route

This new route is progressing well with steadily increasing ridership. Perhaps the most notable deficiency here is the lack of service to G.E. This difficulty could be eliminated by routing the bus directly to G.E. for the 8:00-5:00 shift. However, this would result in the loss of service from Highland Avenue for the two trips at 8:00 and 5:00.

Alternatively, the bus could be routed from West Housatonic to Crane Avenue as has been previously recommended. This would allow diversion of the bus for trips to G.E. and regular service could still be provided at the other end of the line. However, service to Crane Avenue would then need to be shifted by about 30 minutes which would, no doubt, adversely affect some of the present Crane Avenue users. This would be the price necessary to provide this direct connection to G.E. from West Housatonic.

Another option here to serve G.E. would be the addition of an extra bus during the peak hours. This would have the advantage of also allowing both ends of the route to have access to G.E. The cost of such a peak hour bus would be about \$26,700 per year, a 62% increase in costs for a 23% increase in service.



3.1.2.2.6 Holmes Road Route

The ridership on this new route is doing well and Hall School students occasionally cause overcrowded conditions upon returning from downtown shopping trips. A notable deficiency with this route is the lack of service to G.E. for the 8:00-5:00 shift. However, doing this would result in the loss of service from Onota Street for the two trips at 8:00 and 5:00.

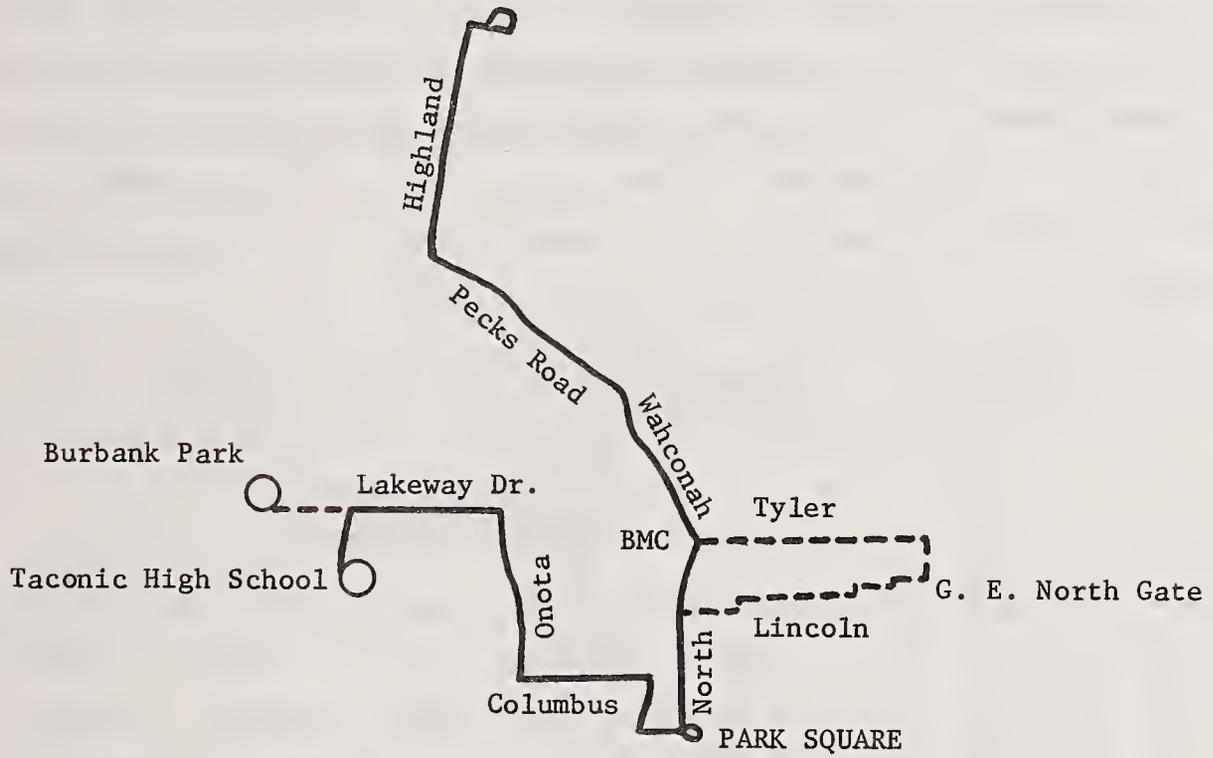
An alternative to this would be the addition of an extra bus to serve G.E. during peak hours. This would have the advantage of also allowing both ends of the route to have access to G.E. The cost of this peak hour bus would be about \$26,700 per year, a 62% increase in costs for a 23% increase in service.

Another observation to be made in connection with this route is the question of which end of the route should receive priority, particularly for the work trip. Currently, the schedule is oriented toward serving Holmes Road and Pittsfield's Southeast quadrant, an upper middle class neighborhood. However, the other end of the route, on Columbus Avenue and Onota Street, lies in a neighborhood with a noticeably higher percentage of poor, elderly families without autos, and minorities--namely those comprising the priority transit market, the so-called transit-dependent.

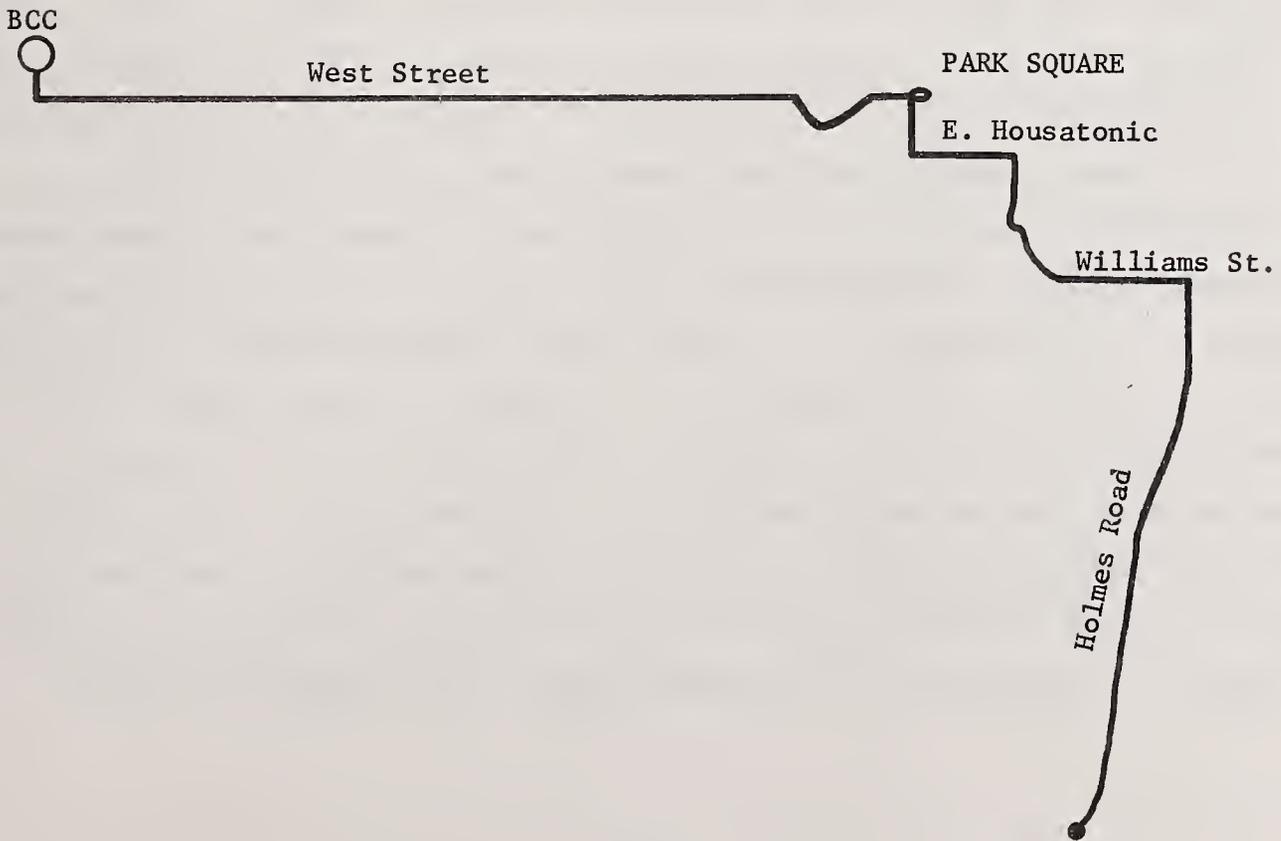
This question could be dealt with by shifting the schedule so that the Onota neighborhood would have convenient connections for downtown workers and a potential connection to G.E. Obviously, this can be expected to have an adverse affect on a number of present users, particularly commuters from the Southeast and Holmes Road. The assumption is made that any losses in ridership would be offset or exceeded by gains from the more transit-dependent neighborhood on Columbus Avenue and Onota Street.

Also of note here is that this transit-dependent neighborhood does not have direct bus service to Berkshire Medical Center (BMC). This could be remedied by dividing the BCC route, pairing Onota Street with Crane Avenue and BCC with Holmes Road. This would not affect the service on Holmes Road and would allow Onota Street to have access to both BMC and G.E. However, in this instance, Crane Avenue service would need to be shifted by about 30 minutes which would have adverse affects on some of the current Crane Avenue users. If Crane Avenue is to be shifted, then it should also be paired with the West Housatonic route to provide access to G.E. Onota Street could then be paired with Highland Avenue for similar benefits.

POTENTIAL ONOTA STREET/HIGHLAND AVENUE



POTENTIAL WEST STREET/HOLMES ROAD



3.1.3 ENERGY

The energy issue, being of major concern these days, is relevant to the evaluation of transit operations. During FY '79 the BRTA fixed route buses consumed a total of 85,000 gallons of fuel, or 330 gallons per day. This can be compared with an estimated total usage of 84,000 gallons per day in the BRTA area for all vehicles. With 2,571,721 passenger miles of travel per year, the bus system yields about 30 passenger miles per gallon. This is equivalent to an automobile getting 20 miles per gallon and carrying an average of 1.5 passengers. Other comparisons with the automobile can be noted on the table below showing passenger miles per gallon for automobiles with various fuel consumption rates and occupancy levels.

		TABLE 8 AUTOMOBILE PASSENGER MILES PER GALLON						
		Auto Fuel Consumption (Miles Per Gallon)						
		10	15	20	25	30	35	40
OCCUPANCY (Passengers Per Auto)	1.0	10	15	20	25	30	35	40
	1.5	15	22.5	30	37.5	45	52.5	60
	2.0	20	30	40	50	60	70	80
	3.0	30	45	60	75	90	105	120
	4.0	40	60	80	100	120	140	160
	5.0	50	75	100	125	150	175	200
	6.0	60	90	120	150	180	210	240

An estimate of gallons of fuel saved by the transit system for FY '79 can be made if it is assumed that 60% - 80% of all transit trips would have otherwise been made by automobiles with an average of 15 MPG and an average occupancy of 1.5 passengers. This would have required 68,580 to 91,440 gallons of fuel for the year, which would result in anywhere from a "loss" of 15,420 gallons (60 gallons/day) to a savings of 6,440 gallons (25 gallons/day). Thus, the maximum expected savings might be 7% for the buses over the automobile, which would represent a 0.03% savings on the total amount of fuel used in the area. While this is not a large amount of savings, as the price of gas goes up, ridership increases and even greater energy savings may be expected.

3.1.4 FARES:

Perhaps the most obvious problem with the current fixed route services is the fare policy. The current fare policy has evolved over time from two separate fare systems which were developed by the two preceding private transit companies in the area. The BRTA has attempted to adapt these fares as is, but this has resulted in noticeable inequities since some riders must pay more than others for trips of similar length. Furthermore, there has not been any fare increase in years which may not be able to continue as costs are steadily rising.

3.1.4.1 Fare Concepts -

In discussing fares, it is worthwhile to review some general concepts related to transit fares. First of all, the purpose of fares is somewhat different for public authorities compared to private operations. In the case of private operators, fares must be set to both cover costs and, at the same time, to provide a return to the owner. This type of policy resulted in the cutbacks in service which were necessitated as private operators dropped unproductive routes in order to maximize their rates of return.

In the case of the public authority, the primary purpose of fares is not simply to generate revenues in excess of costs. Rather, fares are primarily established in order to provide an incentive to encourage a desired behavior on the part of the public. That is, the transit system is operated as a public service designed to achieve certain social objectives such as improving the mobility of the transit-dependent, or providing an alternative to travel by automobile. Therefore, ridership is the measure of success for the public system rather than revenues, and fares are developed to maximize ridership. Of course, fares do have an important secondary role in the public system insofar as revenues are used to offset subsidy costs by the taxpayer.

The concept of fare level can be related to two factors - either the cost of providing the trip, or the value of the trip to the user. Within these two factors, fares can be based on either the average full cost (or value) of the trip, or the marginal (incremental) cost (or value) of the trip.

Another concept related to the fare level is known as "elasticity". This concept relates the change in ridership which can be expected from a given change in the fare level. That is, generally speaking, transit ridership has an average elasticity of -0.33 which is to say that a 1% increase in fares will result in a 0.33% decrease in ridership. Thus, if fares are increased by 100%, ridership will decrease by 33%, and total revenues will therefore increase by 33%. Other elasticities are shown in the following table.

<u>TABLE 9</u>		
<u>TRANSIT ELASTICITIES</u>		
(% Change In Ridership Resulting From a 1% Change In The Item Named)		
<u>ITEM:</u>	<u>TYPICAL ELASTICITY</u>	<u>RANGE</u>
TRANSIT FARES:		
General	-0.33	-0.004 to -0.97
E&H	-0.5	-0.25 to -1.0
Student Off Peak		Less Than -0.3
Shopper Off Peak		-0.75 to -1.0
Peak - a.m.	-0.07	
Peak - p.m.	-0.15	
Off Peak - a.m.	-0.24	
Off Peak - p.m.	-0.44	
Work Trips (England)	-0.19	
Non Work (England)	-0.49	
Peak Work-High Income		-0.1 to -0.25
" " -Med. Income		-0.3 to -0.4
" " -Low Income		-0.3 to -0.5
Off Peak Work-High Income		N.A.
Medium Income		-0.4 to -0.75
Low Income		-0.5 to -1.0

A second concept to keep in mind is the fare structure. An important distinction must be made between the level or the amount of the fare and what can be called the fare structure, or type of fare. There are three basic types of fare structure: a flat fare, where the same price is charged for all trips; the distance based fare, where fares are set in proportion to the length of the trip; and the time based fare, which is set by the time of day.

Another aspect of fares to be considered is the type of collection system. Collection systems include exact fares, prepaid passes, pay getting on, pay getting off, zone tickets, transfers, and automatic (electronic credit card). The collection system affects the speed of operation and typically combinations of these are put to use in any system.

3.1.4.2 BRTA Fares -

With the preceding as background, the BRTA fare policies can be evaluated. The current BRTA fare schedule is shown on the following table.

TABLE 10 BRTA FARE SCHEDULE						
FROM: \ TO:	PITTSFIELD	DALTON	HINSDALE	LANESBORO	LENOX	LEE
PITTSFIELD	30¢	30¢	40¢	30¢	30¢	50¢
DALTON	30¢	20¢	30¢	30¢	30¢	50¢
HINSDALE	40¢	30¢	20¢	40¢	40¢	50¢
LANESBORO	30¢	30¢	40¢	30¢	30¢	50¢
LENOX	30¢	30¢	40¢	30¢	30¢	30¢
LEE	50¢	50¢	50¢	50¢	30¢	30¢

Average 27.5¢

TABLE 11 "TYPICAL" TRIP LENGTHS (IN MILES)						
	PITTSFIELD	DALTON	HINSDALE	LANESBORO	LENOX	LEE
PITTSFIELD	1.8	6.3	9.7	4.4	6.7	11.5
DALTON	6.3	2.8	3.3	10.8	13.0	17.8
HINSDALE	9.7	3.3	0.5	14.2	16.4	21.2
LANESBORO	4.4	10.8	14.2	1.0	11.2	16.0
LENOX	6.7	13.0	16.4	11.2	3.2	4.7
LEE	11.5	17.8	21.2	16.0	4.7	1.5

Average 3.6 Miles

TABLE 12 FARE PER "TYPICAL" TRIP MILE (¢ PER MILE)						
	PITTSFIELD	DALTON	HINSDALE	LANESBORO	LENOX	LEE
PITTSFIELD	16.7	4.8	4.1	6.8	4.5	4.3
DALTON	4.8	7.1	9.1	2.8	2.3	2.8
HINSDALE	4.1	9.1	40.0	2.8	2.4	2.4
LANESBORO	6.8	2.8	2.8	30.0	2.7	3.1
LENOX	4.5	2.3	2.4	2.7	9.4	6.4
LEE	4.3	2.8	2.4	3.1	6.4	20.0

Average 7¼¢/Mile

3.1.4.3 Fare Level -

The aspect of fare policy which generally receives the most attention is the level or amount of the fare. Current fares range from 20¢ to 50¢ with a basic fare of 30¢ and half-fares for the elderly and handicapped for an average of 27.5¢. Determining an appropriate fare level can be approached in two ways, either on the basis of the cost of producing a trip or on the basis of the value of the trip to the user.

3.1.4.3.1 Cost Based Fares

A cost-based fare can be of three types. The full or average cost basis includes all costs related to providing the trip--operating costs of fuel, maintenance and labor, etc.; vehicle costs of depreciation, insurance, etc.; and overhead costs of rent, utilities, taxes, etc. The incremental cost is based on costs related to putting an additional bus in service, that is vehicle plus operating costs. The marginal cost is based on costs required to put an existing vehicle in service for an additional hour or mile and only includes operating costs. These various cost bases are shown on Table 13 and can be compared to the FY '79 BRTA fare which averaged at 7¼¢ per passenger mile with a range of 2.3¢ to 40¢ for various "typical" trips, (Table 17).

With a private bus system, fares must be established to recover all costs. Since this is not the case with public systems, because subsidies are available, a policy decision would need to be made as to what percentage of total costs should be recovered in the fare box. For FY '79, BRTA fares represented about 33% of full costs up from 25% in FY '76. The EOTC suggests that fares should be 20% of costs. If a policy was established that fares should at least cover driver labor (29% of full costs) then the fares should be about 7¢ per passenger mile or 24¢ per average trip.

TABLE 13
COST-BASED FARES

<u>BRTA FY '79 BUS COSTS</u>	FULL COST	INCREMENTAL	MARGINAL OPERATING
Per Revenue Hour	\$20.67	\$15.61	\$ 8.79
Per Revenue Mile	\$ 1.30	\$.98	\$.55
Per Seat Mile (33)	3.9¢	2.9¢	1.7¢
Per Passenger Mile	23.0¢	17.4¢	9.8¢
Per Average Trip (3.6 Miles)	82.9¢	62.6¢	35.3¢

3.1.4.3.2 Value Based Fares

The other approach to establishing an appropriate fare is the value-based fare. That is, the value of the trip to the user is determined on the basis of the same cost of that trip by automobile. The auto trip cost can include either full costs, or marginal costs--so-called "out of pocket" costs. These costs are shown on the following table. It should be noted that parking fees are not included here because parking is variable and is generally free or relatively inexpensive in the BRTA area.

As can be seen, the full auto costs range from 7¢ to 21¢ per passenger mile depending upon the type of car and occupancy, and the fuel costs alone range from 1.7¢ to 6.5¢. Thus, the auto cost of the 3.6 mile average transit trip in a standard auto with 1.5 passengers would be 51¢ for full costs, 28¢ for operating costs, and 16¢ for fuel costs.

An appropriate value-based fare is difficult to determine since so much depends upon the characteristics of a particular market segment. For example, although they might least afford it, the totally transit-dependent (those with no auto access) could be expected to pay a relatively high fare, perhaps approaching taxi fares, since they would have no alternative. The lone driver of a full size standard car who recognizes full cost and would like to eliminate a second car might also be willing to pay a considerable fare. On the other hand, those single auto families with more economical cars where several members ride together and who only recognize out-of-pocket (i.e. fuel) costs, will be less likely to pay a premium fare.

Identifying a "typical" rider based on averages is probably most appropriate, therefore, an average auto at 15MPG with an average 1.5 passengers will have incremental costs of 8¢ per passenger mile which would amount to 28¢ for the average 3.6 mile transit trip.

Thus the fare level might appropriately range from a value based fare of 28¢ (8 ¢ per mile) to a cost based fare of 40¢ (10¢ per mile). These compare to the current base fare of 30¢ which is 7½¢ per mile on the average.

TABLE 14
VALUE-BASED FARES

	FULL AVERAGE COST	OPERATING COST	FUEL COST
<u>1979 AUTO COSTS</u>			
STANDARD:			
Per Vehicle Mile	21.1¢	11.8¢	6.5¢
Per Passenger Mile -			
1.0 Occupancy	21.1¢	11.8¢	6.5¢
1.5 "	14.1¢	7.9¢	4.3¢
2.0 "	10.6¢	5.9¢	3.3¢
Per Average Transit Trip (3.6 Miles) -			
1.0 Occupancy	76.0¢	42.5¢	23.4¢
1.5 "	50.8¢	28.4¢	15.5¢
2.0 "	38.2¢	21.2¢	11.9¢
COMPACT:			
Per Vehicle Mile	16.7¢	9.1¢	4.8¢
Per Passenger Mile -			
1.0 Occupancy	16.7¢	9.1¢	4.8¢
1.5 "	11.1¢	6.1¢	3.2¢
2.0 "	8.4¢	4.6¢	2.4¢
Per Average Transit Trip (3.6 Miles) -			
1.0 Occupancy	60.1¢	32.8¢	17.3¢
1.5 "	40.0¢	22.0¢	11.5¢
2.0 "	30.2¢	16.6¢	8.6¢
SUBCOMPACT:			
Per Vehicle Mile	13.9¢	7.3¢	3.4¢
Per Passenger Mile -			
1.0 Occupancy	13.9¢	7.3¢	3.4¢
1.5 "	9.3¢	4.9¢	2.3¢
2.0 "	7.0¢	3.7¢	1.7¢
Per Average Transit Trip (3.6 Miles) -			
1.0 Occupancy	50.0¢	26.3¢	12.2¢
1.5 "	33.5¢	17.6¢	8.3¢
2.0 "	25.2¢	13.3¢	6.1¢

3.1.4.4 Zone Fares -

Perhaps the most notable fare problem is the inequity in the fare structure, as can be seen in the existing range of BRTA fares. For example, fares within Dalton, or Hinsdale are 20¢, yet fares within any other community are 30¢. Also, fares between adjacent towns are 30¢, and for trips through three towns the fares range from 30¢ (13 miles) to 50¢ (11 miles).

This is illustrated more fully on the preceding tables which show the variation in the price per mile of "typical" trips between towns. This ranges from less than 3¢ per mile to 40¢ per mile with most interchanges between 2¢ and 10¢ per mile. It is the shorter trips which are discouraged while the longer tripmakers enjoy the bargain rates. Obviously, the potential user will make a different decision if his trip will cost 10¢ or more per mile compared to 2¢ or 3¢ per mile.

The existing fare structure could stand to be rationalized in some other way. The simplest way of dealing with the fare structure is to establish one flat fare for all trips regardless of length. While this would be the easiest to remember and administer, it would only perpetuate the current inequities found in the encouragement of longer trips relative to the short trips. Since long trips should have more value to the user, and since they obviously cost more to provide, it would seem to be entirely appropriate to charge a higher fare for them.

At the other extreme, a fare structure might be established which is based on the length of each individual trip similar to taxicabs. However, this would not be very practical since the necessary electronic hardware for fare collection is not readily available.

Given the type of area encompassed by the BRTA, with a wide range of trip lengths being made, a zone system would seem to be most appropriate, in spite of the inequities which may result within any zone or at the zone boundaries. The range of such inequities can at least be narrowed over the existing situation.

The individual communities would seem to comprise logical zones for such a zone fare structure, and a uniform basic fare could be set for trips within or through any community. That is everyone would pay the same fare for trips within their own community, and everyone passing through a community would also pay the same fare for that portion of the trip.

This type of zone structure is illustrated by means of the following hypothetical example. In this example, the amount of the fare is not as important as the relative similarity among fares for similar length trips.

FIGURE 15
 EXAMPLE ZONE FARE STRUCTURE
 (Hypothetical Transit Authority)

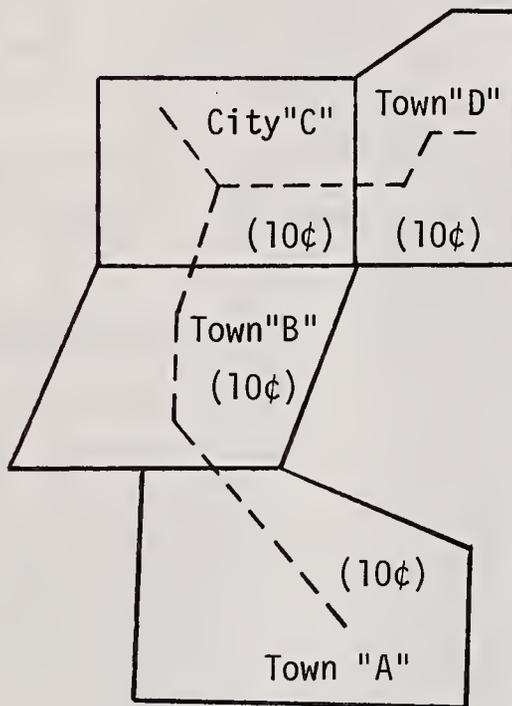


TABLE 15

EXAMPLE ZONE
FARE SCHEDULE:

TO: FROM:	TOWN "A"	TOWN "B"	CITY "C"	TOWN "D"
TOWN "A"	10¢	20¢	30¢	40¢
TOWN "B"	20¢	10¢	20¢	30¢
CITY "C"	30¢	20¢	10¢	20¢
TOWN "D"	40¢	30¢	20¢	10¢

The preceding zone system can be applied to the BRTA. However, a slight modification may be necessary in Pittsfield, the central city, because of current public policies toward revitalization of the CBD which call for the coordination of various programs in support of that policy. It is therefore appropriate for the BRTA to also orient its programs so as to minimize the competitive disadvantages of the downtown over suburban locations.

In this regard, the current fare structure does not support or encourage trips to the downtown. While the route structure does fortunately focus on the CBD, the fares are such (particularly with free transfers) that trips across town or to outlying areas are relatively more attractive to users from a cost viewpoint than are the shorter trips to the CBD which are relatively more expensive on a per mile basis. Trips to the downtown will generally be only half the length of cross town trips, yet the fares are the same in both cases.

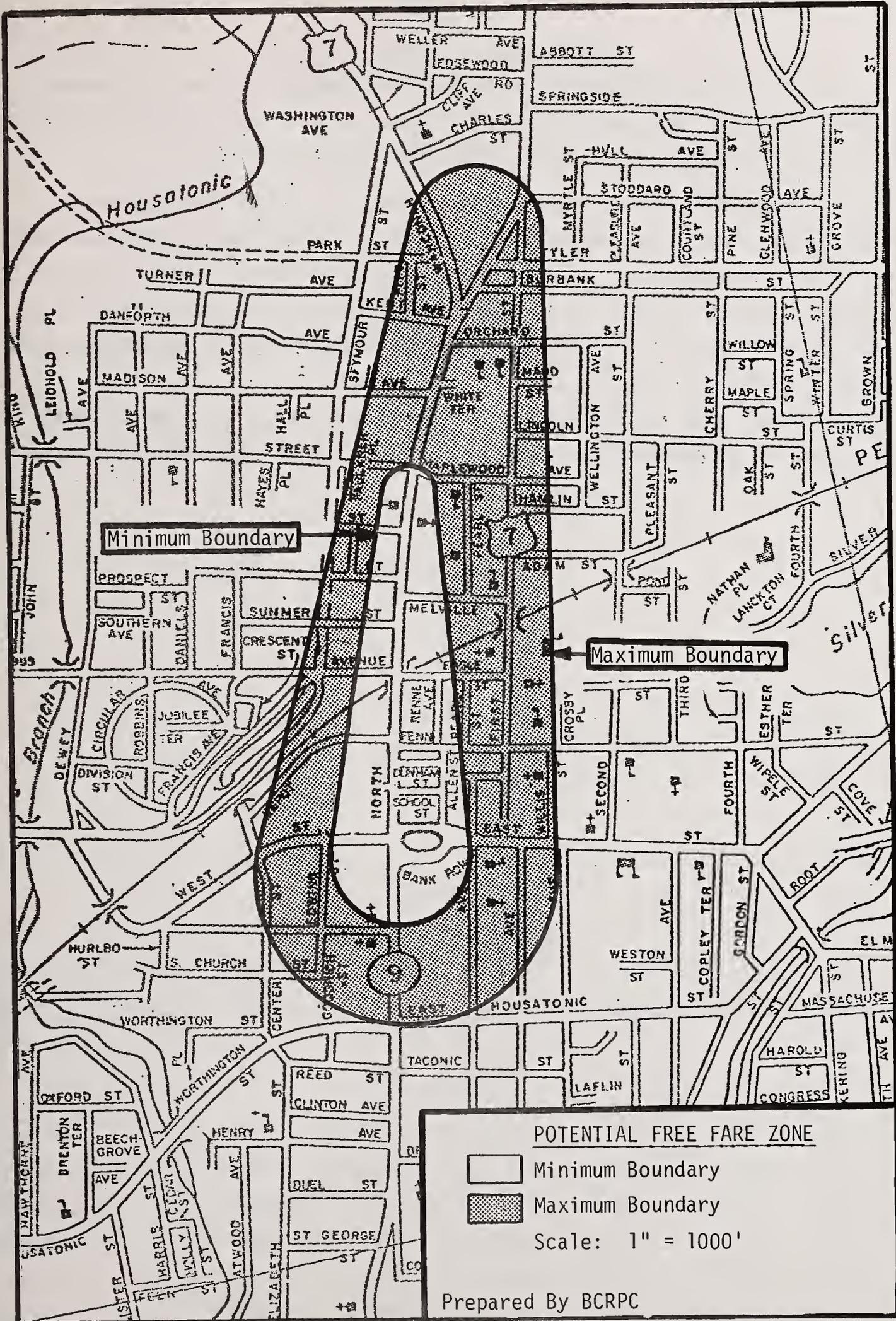
Bus trips to the CBD could be made more attractive relative to the outlying areas if a zone system were utilized. Such a system would have one fare for trips to the CBD zone and an additional fare for trips going through the CBD. This could operate most easily by paying the fare when boarding on trips inbound to Park Square and paying the fare for outbound trips when getting off. Not only would the CBD be more attractive than outlying areas, but this would also allow riders normally going through the CBD to stop off in the downtown for no extra charge.

3.1.4.4.1 Free Fare Zone

Also related to downtown revitalization is the concept of a free fare zone for the CBD to encourage downtown patrons to use the existing buses as a shuttle service up and down North Street, from parking areas to shopping, and from one activity center to another. The map on the following page illustrates the potential extent of such a free fare zone, and the actual boundaries could logically lie anywhere within the shaded area.

The question arises as to how this free fare zone should operate so that the drivers can easily distinguish between those riding for free and those who should pay a fare. This would most easily be done if the free fare zone is implemented in conjunction with the previously described zone system for trips into the CBD.

FIGURE 16



That is, riders from outside the zone pay when they get on the bus for inbound trips, and outbound riders would pay when they get off the bus outside the zone. However, within the zone no one would pay either getting on or off.

The following page illustrates an example of the type of zone system combining a free fare zone downtown and favorable fares to the CBD, with equitable fares related to distance for the BRTA area. In this example, a basic fare of 20¢ is used to illustrate the zone system. However, the fare level itself is a somewhat different issue. Of importance in this illustration is the relationship among the fares for various trips.

This proposed fare structure would also be consistent with fares proposed for the expansion of service into the communities of North and South Berkshire.

FIGURE 17

PROPOSED BRTA ZONE FARE SYSTEM
(With Free Fare Zone In The CBD)

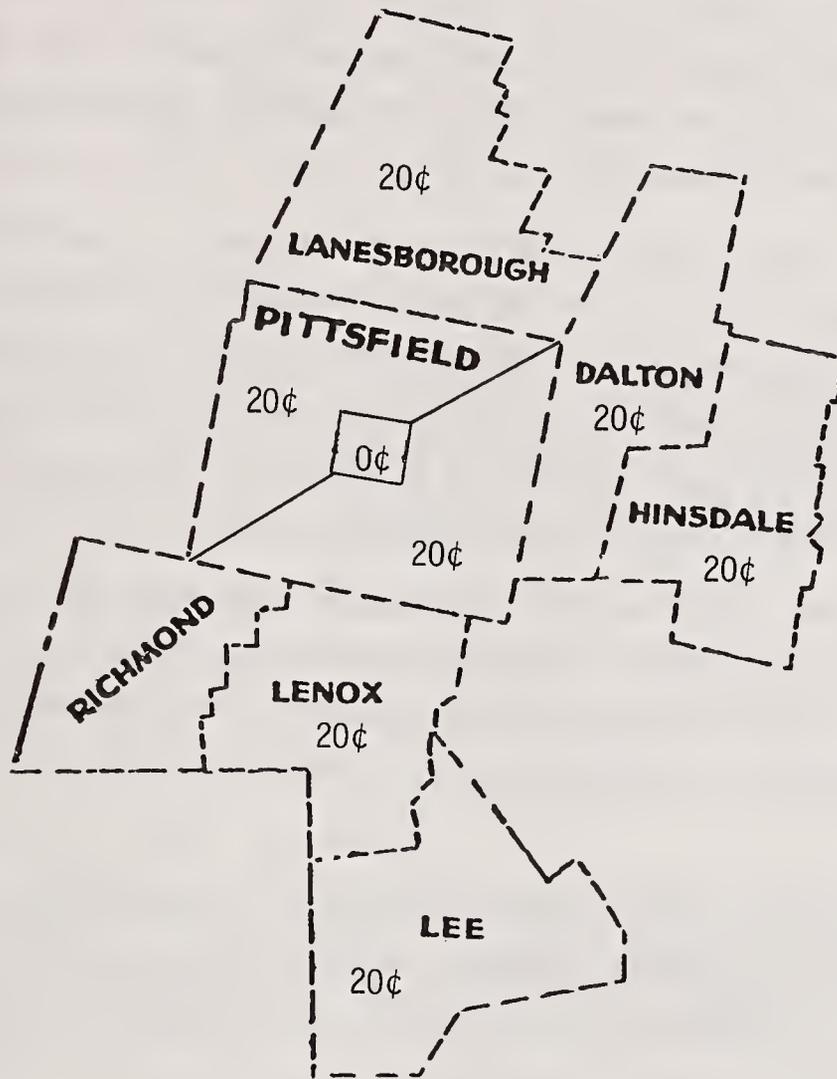


TABLE 16

PROPOSED FARE SCHEDULE

TO: FROM:	Pittsfield -CBD-	Pittsfield -Other-	Dalton	Hinsdale	Lanesboro	Lenox	Lee
Pittsfield -CBD-	0	20¢	40¢	60¢	40¢	40¢	60¢
Pittsfield -Other-	20¢	40¢	60¢	80¢	60¢	60¢	80¢
Dalton	40¢	60¢	20¢	40¢	80¢	80¢	\$1.00
Hinsdale	60¢	80¢	40¢	20¢	\$1.00	\$1.00	\$1.20
Lanesboro	40¢	60¢	80¢	\$1.00	20¢	80¢	\$1.00
Lenox	40¢	60¢	80¢	\$1.00	80¢	20¢	40¢
Lee	60¢	80¢	\$1.00	\$1.20	\$1.00	40¢	20¢

3.1.4.5 Fare Collection -

For the four routes entirely within Pittsfield, the simplest fare collection procedure would be for riders to pay the zone fare when boarding on inbound trips, and on outbound trips riders pay when getting off. Therefore, with a free fare zone in the CBD, no one pays either getting on or getting off. For trips through the CBD, the rider will pay both getting on and upon getting off, thus paying the full fare for a trip in two zones.

For the two routes which traverse several towns, a special technique is required to distinguish among those passengers traveling different distances and who, therefore, should be paying different fares. This problem has generally been dealt with by issuing tickets or checks which indicate the required fare. The checks are then collected at the end of the trip to verify the proper fare. The checks could be plastic tokens color-coded by zone.

For example, on trips inbound or outbound from the CBD, upon boarding passengers are issued checks indicating their destination zone. When getting off, the check is turned in which will indicate that the correct fare has been paid. Anyone without a check must pay the fare for the full length of the trip.

It would be best if fares could be based on a combination of the honor system and the drivers memory; however, on particularly active routes, this may not be feasible. In that event, the previously described system should be utilized.

Another aspect of fare collection to be considered would be prepaid fares. These usually take the form of passes or coupons. Typically, a pass would be purchased for a given month at a price commensurate with the cost of commuting (two trips per day, five days per week). However, the pass would be good at any time for any number of trips since it is simply shown to the driver in lieu of a cash fare. Alternatively, books of coupons could be sold at some convenient amount, possibly at a discount. The individual coupons are individually torn from the book and used to pay the fare as needed. Since the coupons must be counted and handled upon receipt, the passes are more convenient administratively. Either method offers convenience as the main benefit to the user since the necessity of having exact change is avoided. Also, users would be eligible for the reduction in auto insurance premiums, as provided under state regulations, for anyone who can show purchase of 11 months worth of bus rides in a year.

3.2 Elderly And Handicapped Services

3.2.1 PERFORMANCE STANDARDS:

The EOTC has drafted guidelines for the evaluation of special service for elderly and handicapped. Information available from the U.S. Census, as well as BRTA ridership records, can be compared to these guidelines in evaluating the van service.

3.2.1.1 Measures of Benefits -

The total elderly over 60 in the area is 13,265, representing 16% of the total population. The U. S. Census also shows 4,401 disabled which is 5.3% of the total population. Assuming that the incidence of disability for elderly over 60 is twice that of the population as a whole, a total population eligible for the E&H Vans can be estimated to be 16,260. The guidelines suggest that 5-10% of the eligible population should be served which would be from 813 to 1,626 people. Although there were 23,453 E & H trips made in FY '79, it is not known how many individual riders this represents.

3.2.1.2 Measures of Level of Service -

The van service currently requires 24 hour notice and pick up can be predicted with a ten minute "window". Most trips however, are prearranged well in advance and scheduled on a regular basis such as trips for medical treatments or to nutrition sites. Trips which cannot be immediately accommodated because of conflicting requests, estimated to be about three per day, generally can be scheduled for some other time during the day. In the case of such conflicts, priority is given to medical trips.

The leased vans currently in use are stock models and meet required standards in effect for vehicles of their type. Drivers are required to be 21 and have a Massachusetts license with no previous traffic convictions. Though not required, some drivers do have Red Cross first aid training.

3.2.1.3 Measures of Effectiveness -

Fares are not currently charged for the van service. However, the

Executive Office of Transportation and Construction is attempting to enforce their guideline of a 25¢ minimum fare by refusing to fund the state's share of this service feature, leaving the local communities to absorb the difference which amounted to about \$1,625 in FY '79.

Costs of the BRTA vans are not directly shared by social service agencies. However, related outside agencies do participate in the provision of E&H service through separate agreements with Uncle John's Van's to provide special services to their clients and/or through the provision of the agency's own van(s) to directly serve their clients. Under these conditions, it is not necessary for the BRTA to provide as much service as would otherwise be required.

The E&H vans transport about 50% of their riders to nutritional sites which would be classified as many-to-one service. The suggested measure of effectiveness for 50% many-to-one service is seven trips per hour, however the vans have only been producing 4.0 trips per hour. This may be due to a lack of information about the availability of the vans, the lack of sufficient demand, or the standard may be too high for an area with a relatively low population density.

The operational cost of this service to the BRTA for FY '79 was \$10.64 per hour which is less than the EOTC standard of \$12.00 per hour. However, this does not include driver wages paid under CETA.

3.2.2 PROBLEMS:

The elderly and handicapped van service, while not a part of the original Transit Development Program (TDP), has been operated by the BRTA in order to provide transit to those with special transportation needs who cannot readily use conventional fixed route transit buses. The problems with this component of the system are institutional as well as operational.

The current van capacity would appear to be adequate since usage is only running at about half of what could be accommodated according to the EOTC

guidelines, and the usage of the ramp van is not excessive either. Should ridership grow drastically because of improved promotion or new demand, then additional vehicles could be considered. At the present time, the BRTA is subsidizing three full-time vans and a part-time "floater" van as well as a ramp van on a part-time basis.

While there appears to be satisfaction with the less than daily service in the suburban towns, there have been requests for additional hours in Pittsfield. Since the vans only operate until 4:00, it has been suggested that hours might be expanded to serve users in the later afternoon since businesses and stores are opened until 5:00 or 5:30.

Comments have also been made about the lack of this service in the evenings (6:00 p.m. to 10:00 p.m.). Since many places are closed after six, demand would be expected to be low during this time. However, many meetings of public bodies take place in the evenings and the transit dependent are often unable to attend for lack of transportation. Similar requests have been made for more availability on weekends or holidays for various social events which occur throughout the year.

The institutional problems related to the E&H service are more complex than the operational problems and include issues of coordination of services, coordination of funding sources, and competition with private carriers.

There are many organizations in the BRTA area which are involved in various aspects of transportation for the elderly and handicapped, or what might be more broadly referred to as social service transit. Private carriers provide actual facilities and services and include taxi-cabs, Roy's Cabulance, and Unle John's Vans. Various agencies provide funding for transportation for the elderly and handicapped such as Berkshire Home Care, the Nutrition Program, County Commissioners, and the BRTA. Other organizations provide transit service directly to their clients with their own vans, such as the Council on Aging, Berkshire Rehabilitation Center, and the Red Cross. Still other agencies have a need for service but have insufficient funds available for transportation at conventional prices.

Funds which are available often have many restrictions which complicate their use. In addition, these organizations are involved in various types of E&H transit. Some have need for individualized transit to dispersed sites such as taxi service, or need special equipment such as wheelchair accessibility, and others need transit for small groups to specific destination, either on a regular basis or on an as-needed basis.

This diversity makes it very difficult to coordinate services and/or funds in a single unified system which would still be cost effective and yet provide the desired level of service. For example, agencies with their own vans may be providing their clients with not only the most cost effective service but also a relatively high level of service. That is, when the costs of drivers and administration are included in agency overhead accounts at little or no marginal cost, then the agency has a vehicle available instantly and exclusively for its own use with no restrictions.

Uncle John's Vans, a private non-profit corporation, was originally established to provide vans to agencies which had special transit needs but did not want to be in the transit business, as such, in terms of operating their own vans, or the funds available to the agency or the agency's demand did not warrant a full-time van. Therefore, Uncle John's Vans would provide a mechanism to pool available funding resources and coordinate demand so that cost effective service could be provided to groups with special needs.

Upon its formation, the BRTA assumed the responsibility for providing transportation services to the public at-large and in particular to the transit dependent including those with special needs. To this end, the BRTA was able to provide funds to support Uncle John's Vans in making fare-free van service available to the elderly and handicapped in the BRTA area.

The issue of competition with private carriers arises when a public agency provides a public service which duplicates that of a private operator and the public service encroaches on the private operator's market by undercutting prevailing prices. This can have the undesired side effect of actually reducing the service available if the private carrier is put out of business when the intent is to maximize the service available. Of course, it can be argued that

much of the patronage of public service at reduced rates would not have occurred in the private sector; however, it is clear that some patronage would be diverted from the private operator.

Similarly, the issue of fares raises questions of equity. Currently the BRTA sponsors E&H service on a fare-free basis. However, the Mass. EOTC insists that users pay a fare of 10% to 30% of costs with 25¢ as a minimum. With a total cost per ride of \$3.09 in FY '79, fares based on this standard should be 30¢ - 60¢. Using a ratio of 20% of costs which is the middle of the range, the full fare would be 45¢. Using the same ratio as the overall fixed route service (33%), the full fare would be \$1.00. It is appropriate that the fare for a dial-a-ride, door-to-door service be greater than for fixed route buses since a higher level of service is provided.

It is interesting to note that an average cost of \$3.09 per rider buys a taxi trip of 2.7 miles for each individual rider at FY '79 rates (or 1.9 miles at current rates). Given that the vans are designed to accommodate groups of riders, this service does not appear to be terribly cost effective compared to private taxis. This, of course, may be due to the relatively low productivity of the vans on a passenger per hour basis. It also must be recognized that the towns of Dalton and Lanesboro do not have local taxicab operators and even so, taxis might have difficulty accommodating peak load demand such as occurs at nutrition sites.

Also, taxis are not always suitable for those confined to wheelchairs. However, a private operator (Roy's Cabulance) does provide vans for those in wheelchairs at rates established by the Mass-Rate Setting Commission (\$14 per 5 mile trip one way, or \$28 round trip + 50¢/mile after 5 miles). These rates can be compared with the costs subsidized by the BRTA for the Uncle John's ramp van for FY '79 which came to \$6.87 per rider.

The Mass. EOTC recommends that social service agencies should share the costs of special needs transit for their clients on a 50/50 basis. This would provide for the coordination of funds, although, from the taxpayers point of view, there may be little advantage. Given the relative availability of transit funds compared to social service agency funds, many of which are being cut back, the 50/50 matching may not be realistic in all cases.

It should also be noted that while state welfare funds are available to pay for taxi trips for medical purposes, the taxi company does not want to participate because of the unreasonable delays in receiving reimbursement from the state.

The problems associated with the current E & H van service can be summarized as follows: the costs are not commensurate with the level of service provided; while vans provide good group transit, they are less applicable to those with special individual needs; fare free E & H service is inconsistent with state policy and is not equitable when fares are in effect on regular service; private carriers need to have an opportunity to participate in the program; and other agencies do not participate in coordinating funds for social service transit.

The complexity of the issues involved in special needs transit appears to primarily be a function of costs and funding, rather than the provisions of physical facilities and the operation of the service itself. In general terms, those individuals who need the service cannot afford it, and social service agencies generally do not have sufficient funds available to pay for all the service their clients require. Therefore, within the funding resources available to the BRTA, these special needs are also being met in a straightforward manner by subsidizing users rather than simply placing vehicles on the streets and subsidizing operators.

This user-side subsidy is aimed at the following objectives:

- To provide the most cost effective service for those with special needs.
- To support a variety of modes to service wide variations in the quality and quantity of demand.
- To coordinate available funding resources.
- To allow for the participation of private carriers.
- To distribute the benefits of transportation funds to all segments of the population on an equitable basis.
- To comply with state policy for the establishment of fares for special needs transit.

This program utilizes tickets which are honored by operators in lieu of cash when presented by a passenger. The operator then turns them into the BRTA for reimbursement. The system operates as follows:

1. The BRTA has tickets printed which it makes available to participating organizations which service clients with special transit needs.
2. These organizations purchase the tickets from the BRTA at one half of their face value. (For example at 25¢ for a ticket with a face value of 50¢.)
3. The organizations then distribute the tickets to their eligible clients according to the organization's policies.
4. The client uses the tickets like cash to pay the fare in a participating taxicab or Roy's Cabulance.
5. The operator accepts the tickets in lieu of cash.
6. The operator then turns in the tickets to the BRTA, and the BRTA reimburses the operator for the face value of the tickets.

With this arrangement, social service agencies ensure the eligibility of their clients and have the flexibility to determine an appropriate cost-sharing arrangement between client and agency. The user also has flexibility in mode choice: taxicabs for those in need of an individual ride and help with packages or access to the vehicles; vans for those who can use group transit at a lower fare, or the Uncle John's ramp van or Roy's Cabulance for the wheelchair dependent.

In this instance, a nominal "fare" for the vans could be \$1.00 per ride which is not unreasonable for dial-a-ride service. However, agencies would pay 50¢, minus the user share, which might generally be 25¢ or less, and certainly no more than 50¢. At an average operating cost of \$2.67 per ride, the BRTA would still have to continue to pick up the additional operating deficit for the vans (but not the full 100%).

With regular taxis the fare varies with the length of the trip, and would generally require more than one ticket, reflecting the higher level of service. The same would be true for Roy's Cabulance, which operates on a fixed fare system - \$14 per 5 mile trip or \$28 per round trip. The BRTA would therefore be providing a straight 50% subsidy of taxi fares for those with special transit needs. The remainder of the fare would be picked up by the agency and/or the user.

In 1973, a 50% subsidy for elderly was offered by the taxi company, and was very popular with users. However, the program had to be discontinued because drivers resented the fact that their commissions were only based on fares collected and not on the full fares represented by those getting a discount. With the system of tickets representing cash, this pitfall is being avoided.

This system does have some disadvantages and associated costs. The most obvious is the inconvenience that users have to endure to obtain tickets. Also, those not belonging to an organization must join one in order to determine their eligibility. The costs of printing tickets is fairly small, and their distribution and collection can be accommodated within the current administrative capabilities of the BRTA. The amount of work involved in handling the tickets could be cut in half if the face value were increased from 50¢ to \$1.00. Computerized ticket processing can be considered if the volume of tickets becomes overwhelming.

The user-side subsidy taxi program resulted in total costs per rider of \$5.38 in FY'79 and net costs of \$3.75. These compare to the van costs, total and net, of \$3.09 per rider. This large difference can be attributed to the heavy BRTA administrative costs associated with the start up of this service. In fact, BRTA administration has accounted for half of the total costs for the taxis compared to only about 20% for the vans. This, along with the relatively few number of riders in the first year, has resulted in the rather high costs per rider, which is typical of such programs in the first year. At any rate, the entire user-side subsidy program costs less than 3% of the total BRTA operation. Hopefully in the following years the heavy BRTA administrative costs will not be necessary, and increased usage will reduce the costs per rider. At that time, a more critical evaluation of the program can be made. A feature of this program, however, is that only service which is actually used is paid for. If the usage is reduced, total costs would also go down.

One of the fundamental problems with the E&H vans is that they are attempting to serve individual riders similar to taxi-cabs. Since the vans are most efficient when serving group riders, the individual riders tend to lower the overall productivity of the vans. A solution to this would be to only use the vans for group riders and leave the individual riders to be served by the taxis through the user-side subsidy. This would improve the productivity of both services. However, an impediment to this is that with free fares on the vans, users tend to choose the vans over the taxi's even though cab fares are only half price. Charging a fare of perhaps \$1.00 would provide an incentive to individuals to make the transition from the vans to taxis.

The vans could then be made available to various social service agencies for an hourly fee on a subscription basis, and the costs could be shared 50/50 between the BRTA and the agencies. For example, an agency wanting to use a van for two hours per day, three days a week would contract with the BRTA to receive that service. The BRTA would then schedule that amount of service with Uncle John's Vans. The agency would then be billed monthly for half the costs of the vans assigned to them. In the case of those agencies with insufficient demand to warrant a regular subscription service, they would be able to use the taxi's and, therefore, only pay for that amount of service actually used.

This would then allow the BRTA to recover a share of the costs of serving the nutrition program which presently receives free vans while other agencies are required to pay Uncle John's directly. In this way, the BRTA may be able to spread its funds further, and at the same time provide a more efficient service to more users.

Any estimate of the costs of shifting the role of Uncle John's Vans is subject to variation depending on the assumptions which are made. However, if this system was in effect during FY'79, the operating costs of the total E & H service would have been as follows:

	<u>Income</u>	<u>Expenses</u>	<u>Net</u>
● Assume all agencies now contracting directly with Uncle John's Vans will choose to go with the BRTA at the same rate.	\$26,000	\$ 52,000	
● Assume the nutrition program will fund its share of vans estimated at 3/8 ths of present costs.	13,000	26,000	
● Assume current individual Uncle John's Vans users (half current riders) will use the taxis at an average fare of \$4.00 (13,500 x \$4.00).	27,000	54,000	
● Plus current user-side subsidy costs	<u>9,000</u>	<u>18,000</u>	
Total Estimate	\$75,000	\$150,000	\$75,000
Current FY'79 Total E & H Operating Costs	\$ 9,000	\$ 87,000	\$76,000

3.3 Management Effectiveness

Federal Regulations for Transportation Systems Management (TSM) require consideration of actions to increase internal transit management efficiency. Although these actions are most appropriate for large transit systems, with their own administrative bureaucracies, they also have some applicability to the smaller systems.

One such action recommended by the Federal Regulations is the development of cost accounting and other management tools to improve decision-making. This action is being implemented in part through the initiation of UMTA's "FARE" reporting requirements.

Another management tool to be considered is the establishment of a fair and equitable procedure to allocate the BRTA administrative costs among various programs and services, the total costs of which are in turn allocated to the various communities in proportion to the amount of service received. Federal guidelines specify requirements for an indirect cost allocation plan to be established in order to charge full costs to various funding programs.

Several methods can be used to allocate costs with a trade-off required between ease of application and accuracy. The simplest method is to allocate costs arbitrarily on a formula basis with percentages established for distribution of indirect costs to various services and tasks. Unfortunately, such a method carries with it the danger of potential significant inaccuracies which might affect a decision based on the total costs of a specific program. This method is also subject to question and differing opinions on what the percentage distribution should be.

Indirect costs could also be allocated in proportion to the direct or operating costs of a program or service. Or, the indirect costs could be distributed on the basis of riders served, or some combination might be used.

Perhaps the best means for distributing the BRTA indirect costs to programs would be in proportion to the staff time actually spent on the program. This would be a fairly accurate method, and would not be open to question since no arbitrary judgements are involved. Furthermore, it is a method commonly utilized by public agencies and accountants and auditors are familiar with it and find it acceptable. This method can be fairly readily applied utilizing existing staff time sheets. Since this method is a mechanical process, it can also be easily adapted to computer processing, if desired, which will enable the development of fast and accurate reports.

Another TSM action related to administration which is appropriate for consideration by the BRTA is the establishment of maintenance policies to assure equipment reliability. Proper maintenance of the buses is very important not only to protect the public's investment, but also because only well maintained vehicles can provide a reliable level of service which is generally on time. Consequently, appropriate procedures must be followed to verify that the buses are receiving proper preventative maintenance. Currently, the lease agreements require that buses be maintained according to manufacturers specifications.

Also, using communications technology for improved monitoring and control capability, that is equipping the buses with two-way radios, is another TSM action to be considered. Two-way radios are useful in quickly reporting problems which may arise on the vehicles such as breakdowns, accidents, traffic jams, and the like. They would be most valuable for dial-a-ride services such as the E&H vans in order to be able to inform drivers of any last minute cancellations, or change of plans in order to avoid unnecessary trips and to provide better coordination among vehicles.

3.3.1 PERFORMANCE STANDARDS:

The EOTC guidelines for the evaluation of E & H services includes effectiveness measures for management of the program which are also applicable to the regular route service. These measures include monitoring, promotion, and citizen participation. During FY '79 these efforts were necessarily focused on the design of the new bus garage, submission of grant applications, and the management of contracts with private operators. Consequently, the functions of marketing and citizen participation were given less emphasis.

Monitoring of the services primarily consists of compiling monthly ridership figures, maintaining a log of telephone requests, investigation of complaints, and monthly updates of graphs showing ridership and revenues by route compared with the previous year.

A number of opportunities are available for citizens to participate in the process. Most notably, the Transportation Advisory Group (TAG) meets regularly as an open forum for discussion of all transportation issues in the Berkshire Region, and the BRTA transit service has been the subject of several meetings. In addition, special outreach efforts have been made, in conjunction with this study, to obtain the input of specific transit dependent groups through direct contact with various agencies in the area with a potential interest in public transit. Other efforts are aimed at securing input on specific issues from individuals through selectmen and other local elected officials.

With regard to marketing, a transit marketing study was completed in 1978 by ATE Management and Service Co., Inc., and some of the ATE recommendations have been implemented. In FY '79, \$11,000 was spent on direct costs for promotion which was about 1.7% of total expenses for the year. The public image of the system is generally favorable with some exceptions. Positive marketing steps which have been taken include public service announcements and ads on the radio, newspaper articles, and advertisements.

3.3.2 MARKETING:

It is difficult to thoroughly evaluate the effectiveness of the BRTA's recent marketing efforts because the increasing ridership is being influenced by several other factors, notably the gasoline shortage and state air quality regulations to reduce single occupant automobiles. These other factors, particularly the gasoline issue, may well be exerting far greater influence on ridership than any marketing efforts could hope to achieve.

In any event, the important point is that ridership is increasing regardless of the reasons. In fact, when external factors are causing increased ridership, then large expenditures and marketing efforts need not be made. This is opposed to situations of stable or declining ridership when rather intense marketing is much more critical and valuable.

In the past year certain BRTA marketing efforts have contributed to a positive image of the BRTA. This includes the monthly press releases on ridership growth, the children's art display aboard the buses, and the continuing crackdown on any instances of discourteous behavior on the part of drivers. Unfortunately, a certain amount of negative publicity has been generated over the bidding for the new bus garage. However, this has been essentially beyond the control of the BRTA.

There is one marketing effort which is in need of attention and that is the publication of the route system map. This has been in the developmental stages for quite awhile and should be completed as soon as possible. A good system map is not only valuable to convey information to users in the form of a handout, but it is also useful for other marketing efforts such as in advertising, posters in various locations, and as part of informational signs at bus stops.

3.3.2.1 BUS STOPS:

Improvements to bus stops have naturally taken a second priority to obtaining new buses and establishing new routes. However, with these fundamental priorities well in hand, efforts can now be made to provide bus stop signs and shelters. This effort will also be compatible with current efforts to revitalize

the downtown, which will include facade improvements and streetscape amenities all along North Street.

The loading survey which was conducted in March of 1979 resulted in data on the amount of boarding activity at each stop. This information can be used to determine the appropriate type of improvements and priorities among the various stops. There are about 860 bus stops in the system and the activity at each stop varies from 0 to more than 300 passengers per day as noted on the following table.

<u>NUMBER BOARDING</u>	<u>NUMBER OF STOPS</u>	<u>CUMULATIVE TOTAL</u>	<u>CUMULATIVE PER CENT</u>
0	438	438	50.9%
1	136	574	66.7%
2	95	669	77.8%
3	50	719	83.6%
4	36	755	87.8%
5	12	767	89.2%
6	14	781	90.8%
7	12	793	92.2%
8	17	810	94.2%
9	7	817	95.0%
10-14	16	833	96.9%
15-19	5	838	97.4%
20-29	8	846	98.4%
30-49	6	852	99.1%
50-99	3	855	99.4%
100-199	3	858	99.8%
200+	2	860	100.0%
TOTAL	860		

3.3.2.1.1 Signs

Bus stop signs are primarily for identification and can also be used to provide information. Information can be either route specific or system wide, and routes and/or schedules can be shown. These different types of signs have application in various situations. Many stops can use identification signs as a minimum, particularly those stops which are not clear or those used primarily for boarding such as at major destinations or inbound stops in residential areas. It is also appropriate to provide route information at terminal points and important stops along a route. System-wide information should be provided at all transfer points and major stops at important destinations.

The BRTA has funds from a previous UMTA Grant for bus stop signs in the amount of \$3,000. A sign may cost as little as \$75 installed for a simple identification sign. Large signs containing system wide information can be considerably more. Assuming an average of \$100 per sign, the BRTA will be able to install signs at 30 bus stops. Thus, signs could be placed at all stops serving ten or more passengers per day.

Regardless of the level of usage, signs should be provided at the terminal points (12) of all routes and at all stops in the CBD (45) and stops in village centers (10). This will require about 70 signs. Since the BRTA only has funding for 30 signs, funding for 40 additional signs should be included in the next capital grant application. At \$100 per sign, this would amount to \$4,000. Since this is eligible for 90% state and federal funding, the local share would be \$400.

3.3.2.1.2 Shelters

Shelters are a desirable bus stop improvement, particularly in an area like Berkshire County where weather is quite unpredictable and at times unpleasant with rain, snow, cold winds, and occasionally hot sun. While it might be nice from the user's point of view to have shelters at all stops, cost considerations would make this impractical. Therefore, shelters must be limited to the most active stops where they will get the most use and the most people will benefit from them.

Thus, shelters should be provided at major transfer points and boarding stops at important destinations and activity centers. Shelters could also be provided in special circumstances such as in particularly exposed areas, in village centers, or where waiting passengers create problems when taking shelter in private doorways or stores.

The required size of the shelter can be based upon 10% of the total daily boardings as an approximation of the peak usage. For very active stops, it may not be practical to accommodate the peak usage and an in-depth analysis of the usage by time of day is necessary to determine the per cent of users which can be reasonably accommodated. In any case, the size of the shelter may be conservatively estimated where modular design will readily allow for future expansion.

The following table lists the priorities of the major bus stops based on usage, and the estimated shelter capacity appropriate for each. In addition, it may be worthwhile to also provide shelters at some other locations under special circumstances, which can be evaluated as they are brought to the attention of the BRTA.

Shelters can also be accompanied by other amenities. Benches should be included in all shelters if possible, particularly on outbound stops at major destinations, and extra outside benches would be appropriate at major stops where the shelter cannot accommodate the peak demand. Natural lighting and nearby street lamps should be utilized to avoid the need to provide lights in the shelter itself. Trash receptacles should also be available where large numbers of people are expected to congregate. These amenities may be provided by others, such as local communities, civic groups, merchant organizations, etc., rather than by the BRTA.

The BRTA has funding from a prior UMTA Grant for bus shelters in the amount of \$15,000. At an average cost of about \$3,000 - \$4,000, this would buy about four or five shelters. Thus, shelters can be provided at the most active stops as shown on the following Table.

TABLE 18

MOST ACTIVE STOPS FOR BUS SHELTERS

<u>BUS STOP</u>	<u>* INBOUND (I) OUTBOUND (O)</u>	<u>DAILY USAGE</u>	<u>PEAK** USE</u>	<u>SHELTER SIZE</u>
1. Newberry's	0	315	32	10 (A)
2. Popcorner	0	266	34	16 (B)
3. First Aggie (Fenn St.)	0	161	13	8 (C)
4. BCC	I	149	29	16 (D)
5. Berkshire Common	0	114	22	8 (E)
6. Eagle St. @ North	0	75	14	6 (F)
7. Maplewood Ave. @ North	0	65	7	
8. Wahconah @ North	I	59	6	
9. Curtis Hotel (Lenox)	I	49	8	
10. Thorndyke Ave. @ Dalton Ave.	I	45	5	
11. Allendale S.C.	I	42	4	
12. Melville St. @ North	0	32	3	
13. Meadow Lane @ Elm St.	I	32	3	
14. Linden @ North	I	31	3	
15. Columbus @ North	I	29	3	
16. Tyler St. @ North	0	27	3	
17. Woodlawn Ave. @ Dalton/Tyler	I	25	3	
18. Morgan Alley (Lee)	0	24	16	
19. Capitol Theater	0	22	2	
20. Depot St. @ North	I	22	2	
21. Corner Main & W.Park Sts.(Lee)	I	21	8	
22. Second St. @ East	I	20	2	

* From Park Square

** Peak 5 minute period or 10% of daily usage.

(A-F) See following notes.

- (A) Assumed that overflow will use the arcade in the proposed mall which will include benches.
- (B) This will serve about 90% of all users. Exterior benches should also be provided.
- (C) Space is limited here but bank lobby may accommodate overflow. Provide benches also.
- (D) This would accommodate about 75% of all users. Additional shelter is available in the school. The students and school should be asked to provide funding for this.
- (E) The overflow can be accommodated in the nearby arcade. Extra benches should also be provided.
- (F) A shelter might be provided here as part of the proposed urban park.

In addition to the most active stops, shelters could be provided as shown below at Village centers and at special locations along the routes. For example, if shelters are provided on the road at King's Shopping Center in Lenox, then the bus could save time by stopping on the street rather than driving into the Center, which necessitates making 2 left turns across traffic in the northbound direction.

Since this will require 8 more shelters than the BRTA has funding for, these could be included in the next capital grant application. At an average of \$4,000 per shelter, this will require \$32,000. This is eligible for 90% State and Federal funding, and therefore the cost to the local communities would be \$3,200.

TABLE 19 OTHER SHELTER LOCATIONS				
Bus Stop	Inbound Outbound	Daily Usage	Peak Use	Shelter Size
Curtis Hotel, Lenox	I	49	8	8
Morgan Alley, Lee	0	24	16	8
Main & Park Sts., Lee	I	21	8	8
King's, Lenox	I	18	6	6
Hinsdale Center	I	15	7	6
Depot St., Dalton	I	12	5	6
Town Hall, Lanesborough	I	7	4	4
King's, Lenox	0	6	4	4

4.0 Recommendations

Based on the preceding analysis, a number of recommendations can be made to improve the operation of the transit system and to therefore provide better service to more people. It should be noted that these recommendations are being made by the staff on the basis of a technical evaluation. Implementation of these recommendations must be decided upon by the BRTA, who can consider current socio-political factors. The complexity of issues involved in many of these recommendations suggests that they should be dealt with individually by topic rather than all at once, with perhaps a separate BRTA meeting devoted to each subject.

These recommendations are listed in accordance with the federal guidelines for Transportation Systems Management (TSM) improvements. TSM actions are low-cost, short-range improvements designed to maximize the effectiveness of the existing transportation system.

4.1 Fixed Route Buses

Although the fixed routes are doing very well in terms of ridership, there are some modifications which could be made to provide an improved service. These include adjustments to the routes and schedules and revisions to the fares.

4.1.1 ROUTES AND SCHEDULES:

- Elm Street - Utilize additional surveys to further assess the viability of shifting the schedule to provide service to April Lane Apartments.
- North-South - Revise the schedule to provide direct service to G. E. and to serve CBD workers from Lee and Lenox. Decide on appropriate routing in Lanesboro.
- West Housatonic - Consider connecting this route to Crane Avenue instead of Highland Avenue in order to provide direct service to G. E.
- Onota Street - Consider connecting this route to Highland Avenue in order to provide direct service from this neighborhood to G. E. and Berkshire Medical Center. This will then result in the BCC route being connected with Holmes Road.
- Publicize such proposed changes well in advance, and hold public hearings prior to implementation.

4.1.2 FARES:

- Revise the fare structure to provide for 20¢ zones and a free fare zone in the CBD as described in the text. This will provide for a more uniform fare schedule. It is assumed that the average fare will stay approximately as it is at present.
- After the new zone fares are in effect, the results can be evaluated in order to determine what fare level is most appropriate.
- Fare collection should utilize a system of zone checks, and prepaid passes should be considered.
- Half fares for the elderly and handicapped should be limited to the off peak (9:30 - 2:30) in order to minimize over-crowding during peak hours.
- Publicize proposed fare changes and hold public hearings prior to implementation.

4.2 E & H Services

Pending completion of EOTC's study of the elderly and handicapped services, consider the following options to improve efficiency.

4.2.1 E & H VANS:

- Gradually phase out the vans for individual users in order to eliminate an inefficient form of operation. This will free up the vans for the more efficient group riders and taxi-cabs will be better able to accommodate the individual.
- Establish a .50¢ fare for individual riders, as part of the user-side subsidy program, in order to aid the transition of individuals from vans to taxi's, as well as to gain income and comply with state requirements for fares.
- Make the vans available to groups on a subscription basis at an hourly rate of 50 per cent of costs. Thus, the nutrition program will have to begin sharing the costs of transportation just as other agencies do.

4.2.2 USER-SIDE SUBSIDY:

- Continue with the user-side subsidy program in order to provide individual transit dependent riders with a high level of service in the most efficient manner.

4.3 Management

Efficient management is a function of both the administration and marketing of the various services, and improvements in these areas can increase the productivity of the overall program.

4.3.1 ADMINISTRATION:

- Revise the indirect cost allocation plan in accordance with federal guidelines, in order to more accurately apportion administrative costs to various programs on the basis of staff time.
- Review the adequacy of current maintenance policies and inspection procedures to ensure the proper maintenance of the bus fleet.

4.3.2 MARKETING:

- Annually consider appropriate marketing strategies to be implemented from the ATE Marketing Plan and evaluate marketing effectiveness in accordance with the plan.
- Complete and publish the system route map.
- Install identification, regulatory, and/or informational signs at the 70 most important bus stops. This will require that additional funding of \$4,000 be requested in the next capital grant application.
- Place shelters and benches at the most important bus stops in the CBD as a part of downtown revitalization. This can be done within existing funding.
- As the demand arises, install shelters at other important locations. This may require additional funding of \$32,000 to be included in a capital grant application.

REFERENCES

1. "Advisory information on development of Transportation Systems Management (TSM) elements under UMTA and FHWA Joint Regulations", Federal Register, Vol. 40, No. 181 - Wednesday, September 17, 1975.
2. BRTA: Transit Development Program - Update Report, Berkshire County Regional Planning Commission, May 1977.
3. Transit Marketing Study For Berkshire County, ATE Management and Service Co., Inc., October 1978.
4. Public Transportation Fare Policy, Peat, Marwick, Mitchell & Co., U. S. DOT-05-50134, May 1977.
5. Cost Of Owning And Operating An Automobile, L. L. Liston and C. A. Aiken, Federal Highway Administration, 1976.
6. Bus Shelters, Federal Highway Administration, February 1973.

APPENDIX

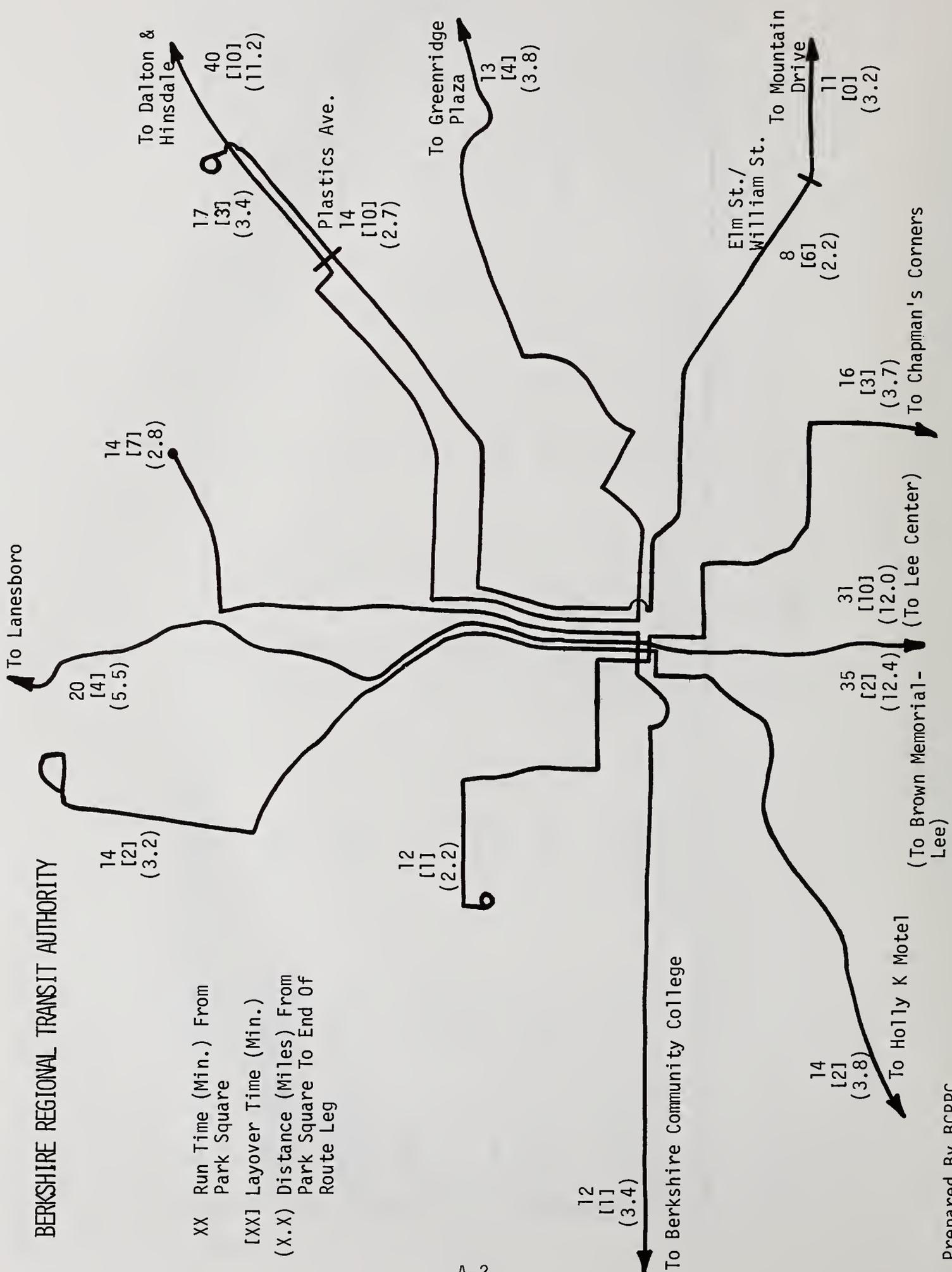
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BRTA Area General Data
From 1970 U.S. Census Statistics

	<u>Pittsfield</u>	<u>Dalton</u>	<u>Hinsdale</u>	<u>Lanesboro</u>	<u>Lenox</u>	<u>Lee</u>	<u>Richmond</u>	<u>Total</u>
POPULATION (% of Tot. BRTA Area)	57,020 (68.9%)	7,505 (9.1%)	1,588 (1.9%)	2,972 (3.6%)	5,804 (7.0%)	6,426 (7.8%)	1,461 (1.7%)	82,776 (100%)
Area (Sq. Mi.) (% of Tot. BRTA Area)	42.43 (23.2%)	21.83 (11.9%)	21.66 (11.8%)	29.45 (16.1%)	21.58 (11.8%)	27.11 (14.8%)	19.06 (10.4%)	183.12 (100%)
Elderly (60+) Pop. (% of Tot. Town Pop)	9,576 (16.8%)	995 (13.3%)	291 (18.3%)	326 (10.9%)	1,035 (17.8%)	890 (13.8%)	152 (10.4%)	13,265 (16.0%)
Households w/no Auto (% of Tot. Town Hshlds)	3,407 (23.2%)	171 (9.1%)	33 (3.3%)	36 (4.7%)	146 (10.9%)	192 (12.2%)	13 (3.3%)	3,998 (8.8%)
Minority Population (% of Tot. Town Pop)	1,324 (2.3%)	45 (0.6%)	8 (0.5%)	22 (0.7%)	53 (0.9%)	13 (0.2%)	6 (0.4%)	1,471 (1.8%)
Handicapped Persons (% of Tot. Town Pop)	3,484 (6.1%)	223 (3.0%)	42 (2.6%)	160 (5.4%)	165 (2.8%)	248 (3.9%)	79 (5.4%)	4,401 (5.3%)
Media.. Family Income	\$11,000	\$12,000	\$10,000	\$11,000	\$10,000	\$11,000	\$12,000	-

BERKSHIRE REGIONAL TRANSIT AUTHORITY



XX Run Time (Min.) From Park Square
 [XX] Layover Time (Min.)
 (X.X) Distance (Miles) From Park Square To End Of Route Leg

BRTA TRANSIT OPERATIONS - FY 79

Route	Elm-Coltsville	Dalton - Hinsdale	North-South	Crane Ave-West St.	Highland West Pitts.	Onota St-Chap.Cnrs.	Total
Number of Vehicles	2	2	2	1	1	1	9
Total Vehicle Seating Capacity	66	66	66	33	33	33	297

ROUTE MILEAGE DATA

Route Miles	6.6	15.15	18.1	6.1	7.15	5.9	59.0
Line Miles	13.2	30.3	36.1	12.2	14.3	11.8	117.9
Bus Runs/Day	23	12	12	11	13	12	83
Dalton	-	137.8	-	-	-	-	137.8
Hinsdale	-	26.2	-	-	-	-	26.2
Lanesboro	-	-	48.0	-	-	-	48.0
Lee	-	-	70.0	-	-	-	70.0
Lenox	-	-	156.0	-	-	-	156.0
Pittsfield	292.0	199.6	159.6	134.2	185.9	141.6	1112.9
Total Revenue Miles/Day	292.0	363.6	433.6	134.2	185.9	141.6	1550.9
Deadhead Miles/Day	26.9	4.04	36	18.15	18.15	20.16	123.4
Grand Total Miles/Day	318.9	367.64	469.6	152.35	204.05	161.76	1674.3

ROUTE HOUR DATA (Hours : Minutes)

Dalton	-	7:20	-	-	-	-	7:20
Hinsdale	-	1:12	-	-	-	-	1:12
Lanesboro	-	-	1:12	-	-	-	1:12
Lee	-	-	3:40	-	-	-	3:40
Lenox	-	-	6:51	-	-	-	6:51
Pittsfield	20:06	12:26	10:30	9:32	11:41	11:06	75:21
Total Revenue Hours/Day	20:06	20:58	22:13	9:32	11:41	11:06	95:36
Layover Time/Day	2:01	2:41	1:37	1:21	0:44	0:46	9:10
Deadhead Hours/Day	1:07	0.20	1:20	0:32	0:40	0:34	4:33
Grand Total Hours/Day	23:14	23:59	25:10	11:25	13:05	12:26	109:19

BRTA FISCAL YEAR 1979 AVERAGE DAILY RIDERSHIP BY MONTH

FROM BRTA TRANSIT RIDERSHIP RECORDS

MONTH	DAYS OF OPERATION	ELM	DALTON - HINSDALE	NORTH - SOUTH	CRANE AVE - WEST ST.	HIGHLAND AVENUE - WEST PITTS	ONOTA ST - CHAPMAN CORNERS	TOTAL
1978								
July	20	626	316	714	177	153	103	2,089
August	23	683	341	684	164	160	130	2,162
September	20	714	331	625	301	151	140	2,262
October	21	745	342	634	311	160	152	2,344
November	21 1 Sat.	775	380	665	295	187	170	2,472
December	20 4 Sat.	792	374	702	253	219	182	2,522
1979								
January	22	826	410	696	301	232	223	2,688
February	20	863	416	745	424	254	237	2,938
March	22	872	421	755	345	241	231	2,866
April	21	837	434	787	358	251	226	2,891
May	22	826	407	753	296	226	223	2,732
June	21	888	454	834	213	258	215	2,861
TOTALS (Average)	253 5 Sat.	788	386	716	284	208	186	2,568

BRTA FISCAL YEAR 1979 MONTHLY RIDERSHIP DATA: FIXED ROUTE BUSES

FROM BRTA TRANSIT RIDERSHIP RECORDS (TRANSFERS NOT INCLUDED)

MONTH	DAYS OF OPERATION	ELM	DALTON - HINSDALE	NORTH - SOUTH	CRANE AVE - WEST ST.	HIGHLAND AVENUE - WEST PITTS	ONOTA ST - CHAPMAN'S CORNERS	TOTAL
1978 July	20	12,523	6,322	14,273	3,532	3,065	2,068	41,783
August	23	15,718	7,847	15,733	3,764	3,687	2,991	49,740
September	20	14,279	6,617	12,504	6,014	3,028	2,799	15,241
October	21	15,648	7,172	13,321	6,339	3,350	3,192	49,022
November	21 1 Sat.	17,041	8,360	14,625	6,494	4,113	3,745	54,378
December	20 4 Sat.	18,995	8,979	16,847	6,063	5,249	4,374	60,507
1979 January	22	18,171	9,019	15,304	6,613	5,112	4,912	59,131
February	20	17,255	8,319	14,902	8,470	5,080	4,738	58,764
March	22	19,178	9,255	16,600	7,585	5,312	5,092	63,022
April	21	17,570	9,108	16,516	7,512	5,270	4,744	60,720
May	22	18,182	8,959	16,569	6,514	4,970	4,914	60,108
June	21	18,639	9,532	17,508	4,480	5,413	4,518	60,090
TOTALS	253 5 Sat.	203,199	99,489	184,702	73,380	53,649	48,087	662,506

BRTA BUS RIDERSHIP TRANSFER DATA FOR FISCAL YEAR 1979
FROM BRTA TRANSIT RIDERSHIP RECORDS

From	To	Elm	Dalton- Hinsdale	North- South	Crane West St.	Highland W. Pitts. Chap.Cnr.	Onota-	Total	Average Transfers	Percentage Transfers
Elm		-	459	4,006	3,513	1,355	805	10,138	40	5.0%
Dalton - Hinsdale		578	-	1,338	986	306	203	3,411	13	3.4%
North - South		3,569	1,308	-	1,864	749	908	8,398	33	4.5%
Crane Ave. - West St.		3,605	1,522	3,248	-	555	1,175	10,105	40	13.8%
Highland Ave. - W. Pittsfield		3,153	493	722	690	-	218	5,276	21	9.8%
Onota St. - Chapman's Corner		2,970	359	993	1,798	887	-	7,007	28	14.6%
TOTAL		13,875	4,141	10,307	8,851	3,852	3,309	44,335	175	6.7%
Avge. Transfers Per Day (253 Days)		55	16	41	35	15	13	175		
Average # Fares/Day		788	386	716	284	208	186	2,568		
Total Unlinked Trips		843	402	757	319	223	199	2,743		
Transfer Ratio (Transfers ÷ # Fares)		.070	.041	.057	.123	.072	.070	.068		
Percentage Transfers (Transfers ÷ Trips)		6.5%	4.0%	5.4%	11.0%	6.7%	6.5%	6.4%		

BRTA FISCAL YEAR 1978 AVERAGE DAILY RIDERSHIP BY MONTH

FROM BRTA TRANSIT RIDERSHIP RECORDS

MONTH	DAYS OF OPERATION	ELM	DALTON - HINSDALE	NORTH - SOUTH	CRANE AVE - WEST ST.	HIGHLAND AVENUE - WEST PITTS	ONOTA ST - CHAPMAN'S CORNERS	TOTAL
1977 July	20	539	204	544	-	-	-	1,287
August	23	609	221	592	-	-	-	1,422
September	21	629	239	532	-	-	-	1,400
October	20	658	248	528	-	-	-	1,434
November	20 1 Sat.	632	267	548	-	-	-	1,447
December	21 3 Sat.	587	277	573	-	-	-	1,437
1978 January	21	668	288	530	-	-	-	1,486
February	20	688	314	573	-	-	-	1,575
March	22*	695	316	561	221	150	118	2,061
April	19	761	357	634	207	135	110	2,204
May	22	713	322	634	183	121	101	2,074
June	22	663	304	618	138	140	108	1,971
TOTALS (Average)	251 4 Sat.	654	280	572	187	137	109	1,650 1,939

*New Routes Started With 10 New Buses March 17, 1978
New Routes For Only 10 Days In March

BRTA FISCAL YEAR 1978 MONTHLY FIXED ROUTES RIDERSHIP DATA

FROM BRTA TRANSIT RIDERSHIP RECORDS

MONTH	DAYS OF OPERATION	ELM	DALTON - HINSDALE	NORTH - SOUTH	CRANE AVE - WEST ST.	HIGHLAND AVENUE - WEST PITTS	ONOTA ST - CHAPMAN'S CORNERS	TOTAL
1977 July	20	10,788	4,083	10,884	-	-	-	25,755
August	23	14,008	5,089	13,610	-	-	-	32,707
September	21	13,207	5,024	11,176	-	-	-	29,407
October	20	13,166	4,968	10,565	-	-	-	28,699
November	20 1 Sat.	13,269	5,608	11,501	-	-	-	30,378
December	21 3 Sat.	14,077	6,649	13,761	-	-	-	34,487
1978 January	21	14,018	6,056	11,127	-	-	-	31,201
February	20	13,758	6,284	11,453	-	-	-	31,495
March	22*	15,995	7,266	12,905	2,206	1,495	1,176	41,043
April	19	14,450	6,775	12,043	3,926	2,571	2,095	41,860
May	22	15,695	7,081	13,941	4,024	2,668	2,231	45,640
June	22	14,574	6,676	13,604	3,035	3,074	2,372	43,335
TOTALS	251 4 Sat.	167,005	71,559	146,570	13,191	9,808	7,874	416,007
*New Routes Started With 10 New Buses March 17, 1978 New Routes For Only 10 Days In March								

BRTA Fiscal Year 1977 Average Daily Ridership By Month

From Dufour Brothers, Inc., Transit Ridership Records

<u>MONTH</u>	<u>DAYS OF OPERATION</u>	<u>ELM</u>	<u>DALTON - HINSDALE</u>	<u>NORTH - SOUTH</u>	<u>AVG. DAILY TOTAL</u>
1976 July	21	550	190	442	1,182
August	22	607	218	462	1,287
September	21	622	210	434	1,266
October	19	638	214	427	1,279
November	20 1 Sat.	661	215	430	1,306
December	23 3 Sat.	654 212	192 100	448 382	1,294 694
1977 January	21	667	216	457	1,340
February	20	681	220	483	1,371
March	23	689	206	445	1,340
April	20	673	220	487	1,380
May	21	635	201	484	1,320
June	22	625	207	521	1,353
TOTALS (Average)	253 4 Sat.	642	209	460	1,311

BRTA FY'79 MONTHLY ELDERLY & HANDICAPPED RIDERSHIP DATA

FROM BRTA RIDERSHIP RECORDS

	UNCLE JOHN'S VANS					USER-SIDE SUBSIDY			Grand Total
	Regular	Floater	Ramp	UJV Total	Taxis	Roys	USS Total		
1978 July	1,797	161	73	2,031	(7)	0	7	2,038	
August	1,883	283	88	2,254	(52)	0	52	2,306	
September	1,858	178	64	2,100	(60)	6	66	2,166	
October	1,869	228	90	2,187	(100)	3	103	2,290	
November	1,862	173	104	2,139	(100)	16	116	2,255	
December	1,833	161	76	2,070	(267)	14	281	2,351	
1979 January	1,969	200	73	2,242	(522)	12	534	2,776	
February	1,867	169	50	2,086	691	10	701	2,787	
March	2,223	227	87	2,537	742	30	772	3,309	
April	1,903	203	77	2,183	707	28	735	2,918	
May	2,147	293	76	2,516	744	27	771	3,287	
June	2,242	257	95	2,594	711	51	762	3,356	
TOTALS	23,453	2,533	953	26,939	4,703	197	4,900	31,839	

(XXX) Estimated From Revenues

BRTA MONTHLY ELDERLY & HANDICAPPED RIDERSHIP DATA

FROM BRTA RIDERSHIP RECORDS

	FY'77: July 1, 1976 - June 30, 1977				FY'78: July 1, 1977 - June 30, 1978			
	<u>UNCLE JOHN'S VANS</u>				<u>UNCLE JOHN'S VANS</u>			
	Regular	Floater	Ramp	UJV Total	Regular	Floater	Ramp	UJV Total
July	1,706	99	51	1,856	1,622	182	132	1,936
August	1,971	77	66	2,114	2,119	220	78	2,417
September	1,804	71	38	1,913	2,058	234	35	2,327
October	1,701	92	39	1,832	1,877	225	29	2,131
November	1,563	188	37	1,788	2,123	223	30	2,376
December	1,771	281	29	2,081	1,611	315	31	1,957
January	1,648	237	45	1,930	1,799	331	25	2,155
February	1,981	218	18	2,217	2,395	401	29	2,825
March	2,198	263	30	2,491	2,065	406	37	2,508
April	1,858	195	26	2,079	1,473	348	51	1,872
May	1,945	223	24	2,192	1,960	410	42	2,412
June	1,933	216	25	2,174	1,947	258	46	2,251
TOTALS	22,079	2,160	428	24,667	23,049	3,553	565	27,167

BRTA FY 79 - TOTAL FIXED ROUTE COSTS

	<u>Amount</u>	<u>Per Revenue Mile (415,920)</u>	<u>Per Revenue Hour (26,200)</u>	<u>Per Revenue Bus (9)</u>
A. <u>FIXED COSTS</u> (Do Not Vary With Bus Miles Or Number Of Buses)				
BRTA Administration @ 70%	\$ 71,000			
Management Fee	25,000			
Dispatcher	12,000			
Clerical	8,250			
Garage Rent	9,071			
Office Rent	1,020			
Comptroller	5,000			
License & Registration	117			
Taxes	555			
Phone	769			
	<hr/>	<hr/>	<hr/>	<hr/>
	\$132,782	\$ 0.32	\$ 5.07	\$14.75
B. <u>INCREMENTAL COSTS</u> (Due To An Extra Bus)				
Fringe	\$ 28,538			
Vacation	6,114			
Health Insurance	9,259			
Bus Insurance	30,000			
Fueler-Washer	8,040			
Uniforms	3,378			
Depreciation (10Yr.St Line)	75,000			
Fare Profit (10%)	18,246			
	<hr/>	<hr/>	<hr/>	<hr/>
	\$178,575	\$ 0.43	\$ 6.82	\$19,842
C. <u>OPERATING COSTS</u> (Due To An Extra Hour)				
Driver Labor	\$154,557			
Fuel	45,063			
Tires	4,329			
Parts & Repairs	13,369			
Mechanic	11,971			
Oil & Filters	987			
	<hr/>	<hr/>	<hr/>	<hr/>
	\$230,276	\$ 0.55	\$ 8.79	\$25,586
D. <u>SUBTOTAL: INCREMENTAL & OPERATING</u>	<u>\$408,851</u>	<u>\$ 0.98</u>	<u>\$15.61</u>	<u>\$45,428</u>
E. <u>TOTAL: ALL COSTS</u>	\$541,633	\$ 1.30	\$20.67	\$60,182

AUTOMOBILE COSTS PER MILE: 1976 & 1979

1976 COSTS:⁽¹⁾

	<u>STANDARD</u>	<u>COMPACT</u>	<u>SUBCOMPACT</u>
FIXED COSTS (10 Yr. Life)			
Capital Costs - (Price) ⁽²⁾	(\$4900)	(\$3900)	(\$3200)
- Per Mile	4.9¢	3.8¢	3.2¢
Insurance	1.7¢	1.6¢	1.5¢
Taxes & Registration	<u>.7¢</u>	<u>.6¢</u>	<u>.5¢</u>
	7.3¢	6.0¢	5.2¢
OPERATING COSTS (10,000 Mi./Yr.)			
Maintenance & Tires - Per Mile	4.2¢	3.4¢	3.1¢
- (% Of Capital Cost)	(86%)	(90%)	(97%)
Fuel & Taxes - Per Mile	4.2¢	3.1¢	2.2¢
(Gas Mileage)	<u>(15MPG)</u>	<u>(21MPG)</u>	<u>(29MPG)</u>
	<u>8.4¢</u>	<u>6.5¢</u>	<u>5.3¢</u>
Total 1976 Costs	15.7¢	12.5¢	10.5¢

1979 ADJUSTED COSTS:⁽³⁾

FIXED COSTS -			
Capital	6.2	4.8	4.1
Insurance	2.2	2.0	1.9
Taxes & Registration	<u>.9</u>	<u>.8</u>	<u>.6</u>
	9.3	7.6	6.6
OPERATING COSTS -			
Maintenance & Tires	5.3	4.3	3.9
Fuel & Taxes ⁽⁴⁾	<u>6.5</u>	<u>4.8</u>	<u>3.4</u>
	<u>11.8</u>	<u>9.1</u>	<u>7.3</u>
Total 1979 Adjusted Costs	21.1¢	16.7¢	13.9¢

(1) Source: Cost of owning and operating an automobile 1976, L.L. Liston and C.A. Aiken, U.S. DOT/FHWA.

(2) Items in parenthesis are for notational purposes.

(3) Based on the change in the CPI from 170.1 on 6/76 to 216.6 on 6/79, a 27.3% increase.

(4) Based on an increase in gas costs from 61¢/Gal. to 95¢/Gal., a 55.7% increase.

1979 AUTOMOBILE COST PER PASSENGER MILE VS. OCCUPANCY

<u>OCCUPANCY</u>	<u>FULL COSTS (¢/PMT)</u>		
	<u>STND.</u>	<u>COMP.</u>	<u>SUB.</u>
1.0	21.1¢	16.7¢	13.9
1.5	14.1	11.1	9.3
2.0	10.6	8.4	7.0
2.5	8.4	6.7	5.6
3.0	7.0	5.6	4.6
4.0	5.3	4.2	3.5
5.0	4.2	(3.5)	(2.9)
6.0	3.5	(2.8)	(2.3)

<u>OPERATING⁽¹⁾ (¢/PMT)</u>		
<u>STND.</u>	<u>COMP.</u>	<u>SUB.</u>
11.8¢	9.1¢	7.3
7.9	6.1	4.9
5.9	4.6	3.7
4.7	3.6	2.9
3.9	3.0	2.4
3.0	2.3	1.8
2.4	(1.9)	(1.5)
2.0	(1.5)	(1.2)

<u>FUEL COSTS (¢/PMT)</u>			
1.0	6.5¢	4.8¢	3.4
1.5	4.3	3.2	2.3
2.0	3.3	2.4	1.7
2.5	2.6	1.9	1.4
3.0	2.2	1.6	1.1
4.0	1.6	1.2	0.9
5.0	1.3	(1.0)	(0.7)
6.0	1.1	(0.8)	(0.6)

<u>FUEL USED</u> <u>(Pass.Mi. Per Gallon)</u>		
15	20	30
22.5	30	45
30	40	60
37.5	50	75
45	60	90
60	80	120
75	(100)	(150)
90	(120)	(180)

(1) So called "out of pocket" or perceived costs.

(2) Items in parenthesis are not currently attainable.

BERKSHIRE COUNTY REGIONAL PLANNING COMMISSION
BERKSHIRE REGIONAL TRANSIT AUTHORITY

LOADING SURVEY

The BCRPC and BRTA will be conducting a "loading survey" on the BRTA's six bus routes on March 27, 28 and 29. Help is needed to conduct this survey which involves the counting of passengers getting on and off the bus at each stop.

If you are interested in working on this project, or would like further information, or if for some unforeseen reason you know before the day of the survey that you will be unable to work any part of your shift, please call:

Glenn Russo (or Charlie Cook) of the BCRPC at 442-1521.

For any last-minute cancellations the days of the survey, please call:

before 5:30 A.M. - Glenn Russo at 442-0642

between 5:30 - 8:00 A.M. - Glenn Russo at 447-9577

after 8:00 A.M. - BRTA Office at 499-BRTA (2782)

Other Information

The day(s) you will be surveying, bring with you:

- a watch (important)
- this form
- lunch, if you want

Above all - BE ON TIME - It is desirable that you be at Park Square in Pittsfield about fifteen (15) minutes before your designated starting time. This will allow sufficient time for you to receive instructions and to avoid any last-minute confusion when the bus arrives.

You will be contacted several days in advance of your survey day to verify your participation and start and finish times.

I have signed up for _____
(day and date)

I should arrive at Park Square at _____
(time)

I will start at _____ and end at _____
(time) (time)

INVOICE: (Rate of Pay = \$3.00 per hour)

NAME: _____

ADDRESS:.. _____

PHONE: _____

DATE: _____

TIME WORKED: _____ to _____

_____ Hours x \$3.00 per hour = \$ _____

SURVEYOR SIGNATURE: _____

BCRPC/BRTA SUPERVISOR SIGNATURE: _____

Instruction Sheet for Surveyors

The purpose of this survey is to get a complete count of riders using the buses.

Above all else, it is important to be accurate and courteous.

Sit in the seat directly behind the bus driver - he/she will help you with bus stop names and passenger count (fare type) if you need it.

Synchronize your watch with the bus driver's. Do not use clock at Park Square for recording times.

Avoid conversation with the driver while passengers are getting on and off the bus, and especially avoid getting involved in conversations with other passengers. If you are asked to explain what you are doing, simply say that you are helping the Berkshire County Regional Planning Commission and the Berkshire Regional Transit Authority with a survey. It is not necessary to go into any detailed explanation.

In general, the survey form should be filled out in the following manner:

1. Count passengers getting off bus when it stops and record in column headed TOT OFF. (Note: Passengers may get off bus by either front or back door. Be sure to watch out for this.)
2. Check off each passenger boarding by fare-type; i.e. number paying full fare (Column FF), half fare (Column $\frac{1}{2}$ F), and number using a transfer (Column T). Do not count children riding for free. (Put in remarks.)
Note: For half-fare passengers: elderly and handicapped individuals pay only half-fare. Put an H in the $\frac{1}{2}$ F column for each non-elderly handicapped person getting on the bus and a tick mark for all elderly.
3. Count up total check marks and enter in TOT ON column.
4. Record the time the bus LEAVES the listed stops that are underlined with a heavy black line - regardless of whether anyone gets on or off at the stop. Record from the top of the sheet to the bottom or bottom to top as noted.
5. If no one gets on or off at a listed stop, put a dash in the TOT ON and TOT OFF columns. This will help you keep track of where you are.

Below is part of a form with examples of situations which may occur:

- Line 1: a typical stop, with 2 passengers getting off and four getting on (2 full fare, 1 half fare and 1 transfer); the total on is 4 and the bus left the stop at 9:11.
- Line 2: an elderly person gets on the bus at a point between the two listed stops.
- Line 3: no one gets on or off the bus at this stop, but it is designated as a time checkpoint; the bus passed this stop at 9:25. Note dashes in TOT ON and TOT OFF columns.
- Line 4: a class of 5th graders boards the bus with their teacher, all of whom pay full fare. It can be assumed that this is an unusual occurrence and is appropriately noted in the column headed "Notes". The other information is also recorded in appropriate places. It is important to note such unusual boarding occurrences and to note where the group got off the bus as well. (See Line 5).
- Line 5: the 5th grade class mentioned in Line 4 got off at this stop and it is appropriately noted.

BRTA LOADING SURVEY

DATE: 3-27-79
 DAY OF WEEK: TUESDAY
 WEATHER CONDITIONS: _____

ROUTE: BCC-CRANE
 RUN: 3 TIME START: 9:11
 READ: _____ UP _____ DOWN

BUS NO. _____
 SURVEYOR: John Doe

OUTBOUND	STOPS		BOARDING			TOT ON	TOT OFF	TIME	NOTES
	INBOUND		FF	3/4 F	T				
1.	Newberry's/Popcorner		"	1	1	4	2	9:11	
	BCC Bus Stop/Edwin Street					-	-		
	Center Street Crosses					-	-		
2.	Adams Superama/Hurlbut Street					-	-		← 1 KF ON 0 OFF
	Salvation Army/WMECO					-	-		
3.	S. John Street/Riverview West					-	-	9:25	
	Onota Street/S. Onota Street					-	-		
	Albro Street/Merriam Street					-	-		
4.	St. Mark's Church/Euclid Avenue		###	###		20	0		SCHOOL CHILDREN w/ TEACHER
	Opp. Backman Ave./Backman Ave.					-	-		
	Opp. Crosby Jr. High/Crosby Jr. High					-	-		
	Opposite Roselyn Dr./Roselyn Drive					-	-		
	Valentine Road/Jason Street					-	-	9:30	
	Opp. Sherwood Drive/Sherwood Drive					-	-		
	Opp. Nottingham Dr./Nottingham Dr.					-	-		
	Tor Court/Opposite Tor Court					-	-		
5.	Opp. Roberta Road/Roberta Rd.					0	20		SCHOOL CHILDREN OFF
	Opp. Eleanor Road/Eleanor Road					-	-		
	Blythewood Dr./Fort Hill Ave.					-	-		
	Churchill St./Opp. Churchill Street					-	-	9:35	
	Churchill Crest					-	-		
	Opp. Mountainview Dr./Mtnview. Dr.					-	-		
	Berkshire Community College					0	4	9:40	

SAMPLE

ELM ST.-COLTSVILLE ROUTE
Mountain Drive To Park Square

INBOUND
(Read Down)

OUTBOUND
(Read Up)

STOPS OUTBOUND / INBOUND	Miles Between Stops	Total (22)			Total (22)		
		on	off	net	on	off	net
Dalton Division Road/Mountain Drive		6		13			16
Leona Drive/Opp. Leona Drive	.25			19		15	31
Pine Grove Dr./Opp. Pine Grove Dr.	.1	2				1	31
Harryell Street/Opp. Harryell St.	.1			21		6	37
Doreen St./Opposite Doreen Street	.1	6				5	42
Bushey Road/Ann Drive	.2			27	2	6	46
Nancy Avenue/City Savings Bank	.05	13		40	2	10	54
Meleca Avenue/Adams Supermarket	.05	3		43		8	62
Opposite Denise Ave./Denise Avenue	.05	8		51		11	62
Opposite Dan Avenue/Dan Avenue	.05	1		59		4	73
Opposite Darlene Avenue/Darlene Ave.	.05	2		60		4	77
Maple Grove Dr./Deborah Avenue	.1	4		62			81
Birch Grove Drive/Donna Avenue	.05	4		66		2	83
Lillian Street/Adelaide Avenue	.05	4		70		7	90
Dexter Avenue/Dodge Avenue	.05	4		74		6	96
Marcella Avenue/Elmview Terrace	.05	13		87		8	96
Wood Avenue/Egremont Avenue	.05	14		101		4	104
Cleveland Street/May Terrace	.1	11		112		11	108
Kenwood Street/Hazelwood Terrace	.05	4		116			
Elmhurst Avenue/Putnam Avenue	.05	9		125	1	9	119
Dorchester Avenue/Easton Avenue	.05	8	2	131		5	127
Belvidere Ave./Opp. Belvidere Ave.	.05	2				4	132
Reuter Ave./Opposite Reuter Avenue	.05	1		133		1	136
Ontario Street/Opp. Ontario St.	.05	1		134	3		137
Deming Park Entrance/Holmes Road	.05			135		5	134
Meadow Lane/Edward Avenue	.05					3	139
Opp. Livingstone Ave./Livingstone	.05	32	6	161	5	12	142
Opp. Stratford Ave./Stratford Ave.	.05	4	1	164		3	149
Newell Street/Northumberland Road	.1	6	1	169	1	11	152
Opposite Pollock Ave./Pollock Ave.	.05	8		177		3	162
Car Wash/Commonwealth Avenue	.05	5		182		2	165
Friendly Ice Cream/High Street	.05	1		183			167
A & P/Deming Street	.05	1	1	184	1	1	167
Root Place/Gordon Street	.05	1	1	184	2	4	169
Fourth Street/Copley Terrace	.1	2	1	185		6	175
Old St. Luke's Hosp/Appleton Avenue	.1	1		186		2	
Second Street/Pittsfield High School	.1		2	184			177
Willis Street/Pomeroy Avenue	.1	4	16	172	18	7	177
First Street/Bartlett Avenue	.05	3	4	171		4	166
Wendell Avenue Crosses	.1		5	166		2	170
	.05	2	6	162	6	10	172
							176
OUTBOUND : ADD 1					1		175

DROP 3
NETS 13

()=number of runs bus(es) made during the day.

ELM STREET-COLTSVILLE ROUTE

Coltsville To Park Square

STOPS		Miles Between Stops	OUTBOUND (Read Down)			INBOUND (Read Up)		
OUTBOUND	INBOUND		on	off	net	on	off	net
			Total (23)			Total (20)		
Popcorner/Newberry's			60	50	162	92	80	175
First Agricultural Bank/Depot St.		.1	56	27	172		10	163
Eagle Street/Columbus Avenue		.1	16	10	201	5	27	173
Melville Street/Summer Street		.1	12	2	207		3	195
Capitol Theater/Union Street		.05	13	8	217	7	15	198
St. Joseph's Church/Bradford Street		.05			222			
Maplewood Avenue/Linden Street		.05	21	15		5	21	206
White Terrace/Madison Avenue		.1	1	1	228	2	5	222
Orchard Street/Kent Avenue		.05	4	1	228		2	225
Burbank Street/Wahconah Street		.05	4	1	231	14	8	227
Corner of North & Tyler Streets		.05	13	8	234	6	3	221
First Street Crosses		.1	1	1	239		1	218
Opposite Myrtle St./Myrtle Street		.05	1		239	1	3	219
Smith Street/Pleasure Avenue		.05	6	1	240	4	3	221
Opposite Courtland St./Courtland St.		.05	1		245			
Cherry Street/Pine Street		.1	3	4	246	2	2	220
Opposite Glenwood Ave./Glenwood Ave.		.05	1	1	245	4		220
Burbank Street/Grove Street		.1	1	2	245	9	1	216
Brown Street Crosses		.05		5	244	8		208
Parker Street Crosses		.05	2	6	239	8	2	200
Plunkett Street Crosses		.05	1	10	235	11	1	194
Forest Place/Curtis Terrace		.1	3	32	226	7		184
Woodlawn Avenue Crosses		.05	2	7	197	25		177
Opp. Westminster St./Westminster		.1		11	192	8		152
Harvard Street Crosses		.05	1	10	181	12	1	144
Dartmouth Street Crosses		.05		3	172	2		133
Benedict Road Crosses		.1	1	3	169	4	1	131
N.Hampshire Ave./Opp. New Hampshire		.05			167			
Rhode Island Ave./Pittsfield Avenue		.05		4		1		128
New York Ave./Delancy Avenue		.05		2	163	5		127
New Jersey Ave./Ridgeway Ave.		.1		7	161	4		122
Opp. Brighton Ave./Brighton Avenue		.1			154	5	1	118
Ohio Ave./Somerset Avenue		.05		3		1		114
Opp. Windsor Ave./Windsor Ave.		.1		1	151	1	1	113
Allendale Road/Allengate Avenue		.05	1	2	150	4		113
Opp. Kensington Ave./Kensington Ave.		.1		3	149	1		109
Connecticut Ave./Yorkshire Avenue		.05		1	146	1		108
Plastics Ave./Thorndike Avenue		.05		29	145	1		107
---- G. E. Plastics Avenue Gate		.2		43	116	37	2	
---- Flagstops		.1		1	76			
Opp. Devonshire Ave./Devonshire Ave.		.95		1	75			72
Corner of Dalton & Crane Avenues		.45		11	74		1	73
Allendale Shopping Center		.1	8	47	63	6		67
---- Colonial Gardens		.75	2		24	42		25
---- Flagstops to Dalton Town Line		.2		3	26	2		23
					23	6		17
OUTBOUND: DROP 2				2	21			
TWO EXTRA RUNS TO GREENRIDGE PLAZA			18	22	17			

() = number of runs bus(es) made during the day.

DALTON-HINSDALE ROUTE

Hinsdale To Park Square (Pge.1)

INBOUND
(Read Down)

OUTBOUND
(Read Up)

STOPS	Miles Between Stops	Total (12)			Total (12)		
		on	off	net	on	off	net
INBOUND / OUTBOUND				0			
Corner Hardware Store		15		15		4	5
Flagstops	.35	4		19		7	9
Holmes Road/Opposite Holmes Road						1	16
Old Dalton Road Crosses	.5	1		20			17
Flagstops						5	
	1.55	4	1	23			22
						1	23
Fox Road/East Housatonic Street		3		26		2	25
Opp. Taunton Ter./Taunton Terrace	.55	1		27		4	29
Corner of East, Orchard & Main		8	1	34		4	33
----Pease Avenue/Opp. Pease Ave.	.45	3		8	MINUS 29 NOS		21
----Corner Orchard Rd. & Rte. 9	.2	3		11		1	
---- Anthony Rd./Opposite Anthony Rd.	.3	2		13			22
---- Dwight St./Opp. Dwight Street	.1						
---- David Street/Burr Drive	.1			42	PLUS 29 NOS		34
Mtnview./Opposite Mtnview Terrace	.1	2		44		1	35
Jennings Avenue/Opposite Jennings	.1	1		45		5	40
Lake Street/Opposite Lake St.	.1	2		47		2	42
Otis Avenue/Opposite Otis Ave.	.1	2		49		1	43
Riverview Drive/Weston Avenue	.1					2	
Opposite Depot/Depot Street	.05	12		61		2	45
Corner of North & Main Sts.	.15	2	1	62		4	47
Opposite Cliff St./Cliff Street	.1	2		64		1	
Opposite Beverly St./Beverly St.	.05	1		65			
Opposite Ensign/Ensign Street	.05						
Opposite Hale Street/Hale Street	.05						
Deming Street Crosses	.05	1		66			
Opposite Merriam/Merriam Street	.05						
Corner of Franklin & North Sts.	.05	5		71		5	48
Corner Pleasant, Florence & Franklin	.15	4		75		4	53
Deming Street Crosses	.1						
Opposite Hale Street/Hale Street	.1	1		76		1	57
Opposite Ensign/Ensign Street	.1	2		78		3	58
Opposite Beverly/Beverly Street	.1						
High Street Crosses	.15	3		81		2	61
Corner of Main St. & Daly Avenue	.2	2		83		3	64
Glennon Ave/Opp. Glennon Ave.	.1					1	67
Haworth St./Opp. Haworth Street	.1					2	69
Carson Avenue Crosses	.1	1		84		4	71
Central Avenue/Opp. Central Ave.	.05	1		85		4	72
Corner of Curtis and Main Sts.	.1	7	1	91		4	76
First Street/Opp. First Street	.15						
Second Street/John Street	.05	1		92		5	80
Third Street/Cemetery	.1	1		93		1	85
Playground/Washington Street	.05	2	3	92		1	86
Corner of Curtis and High Sts.	.1	1		93		1	87
Opp. Pomeroy Ave./Pomeroy Avenue	.05	2		95			
Opposite Warren Ave./Warren Ave.	.05					2	88
Corner of Park St. & High Street	.15	4		99		2	89
Chestnut Street/Park Circle Drive	.1	3		102		1	91
Oak Street Crosses	.05					3	92
Pine Street Crosses	.1	2		101		3	95
Ashuelot Street Crosses	.1	4		103		3	98
	.05					4	101
							106

() =number of runs bus(es) made during the day.

DALTON-HINSDALE ROUTE

Hinsdale To Park Square (Pge.2)

INBOUND
(Read Down)

OUTBOUND
(Read Up)

	STOPS		Miles Between Stops	Total (12)			Total (12)				
	INBOUND	OUTBOUND		on	off	net	on	off	net		
DALTON	Craneville School/John Street			1		108		4	104	NOB = 105 ADD 1	
	Corner of Rte. 9 and Park Street		.2	1		109		3	108		
	Farm Road/Opposite Farm Road			1		110		2	111		
	Opp. Housatonic St./Housatonic St.		.5	2		111					
	Opposite South St./South Street			4		113					
	Flagstops		.75			117		7	113		
	Highview Drive/Hubbard Avenue			3				1	120		
	Meadowview Drive/K-Mart		.2	2	5	120		7	121		
	Coltsville Intersection		.15	1	1	82	MINUS 35 NOB	2	4	128	PLUS 47 NOB
	Burger Chef/Bradlee's		.1	4		82		2	8	83	
	Devonshire Ave./Opp. Devonshire Ave.		.45		1	86					
	Thorndike Ave./Plastics Ave.		.05	8	2	85		2		89	
	Yorkshire Ave./Connecticut Ave.		.05			91					
	Kensington Ave/Opp. Kensington Ave.		.1	1		92				91	
	Corner of Allengate & Dalton Aves.		.1		1	91		1	2	92	
	Corner of Elberon & Allengate Aves.		.1	2	1	92		1	1	92	
	Windsor Avenue Crosses		.1	1		93			2	94	
	Somerset Avenue Crosses		.1					1	3		
	Brighton Avenue Crosses		.05	1		94				96	
	Ridgeway Avenue Crosses		.05	2		96			1	97	
Opp. Delancy Ave./Delancy Ave.		.1					1	1			
Opp. Pittsfield Ave./Pittsfield Ave.		.1							97		
Benedict Road Crosses		.05		1	95		2	1	96		
Ensign Avenue/Dartmouth Street		.05		1	94			1			
Stanley Avenue/Harvard Street		.05							97		
Alden Avenue/Westminister Street		.05					2	5			
PITTSFIELD	Perrine Ave/Opp. Perrine Avenue		.05							100	
	Norman Avenue/Curtis Terrace		.05	1	2	93		2	2	100	
	Dickinson Ave./Plunkett Street		.05	4		97			6	100	
	Sadler Ave./Parker Street		.05	2		99			1	106	
	Draper Ave./Opp. Draper Avenue		.05		1	98		1		107	
	Scammell Ave./Opp. Scammell Ave.		.05		1	97					
	Brown Street Crosses		.05								
	Opposite Grove Street/Grove Street		.05								
	Opposite Glenwood/Glenwood Avenue		.05								
	Opposite Pine Street/Pine Street		.05					1	1	106	
	Corner of Springside Ave. & North St.		.25	2	2	128	PLUS 31 NOB			106	MINUS 55 NOB
	BMC Entrance/Stoddard Avenue		.1		1	127			1	162	
	Opposite Tyler Street/Tyler Street		.05		3	124		10	2		
	Wahconah Street/Burbank Street		.05	1	1	124					
	Kent Avenue/Orchard Street		.1	2	2	124					
	Madison Avenue/White Terrace		.05		1	123		1	2	154	
	Linden Street/Maplewood Avenue		.1	1	22	102		22	1	155	
	Bradford Street/St. Joseph's Church		.05					2		134	
	Union Street/Capitol Theater		.05		12	90		4	1	132	
	Summer Street/Melville Street		.05					6	4	129	
Columbus Avenue/Eagle Street		.1	1	24	67		18	1	127		
Depot Street/First Agricultural Bank		.1	2	11	58		29	1	110		
		.05							82		

() = number of runs bus(es) made during the day.

DALTON-HINSDALE ROUTE

Greenridge Plaza To Park Square

OUTBOUND
(Read Down)

INBOUND
(Read Up)

	STOPS		Miles Between Stops	Total (9)			Total (9)		
	OUTBOUND	INBOUND		on	off	net	on	off	net
				16	45	58	69	10	82
	Newberry's/Popcorner.		.2	4	4	29			
	Wendell Avenue Crosses		.05			29			
	Bartlett Avenue/First Street		.05				2		23
	Pomeroy Avenue/Willis Street		.05		1			1	21
	Pittsfield High School/Second St.		.1	5	3	28	1		22
	Appleton Ave./Old St. Lukes Hospital		.1			30	2		21
	Copley Terrace/Fourth Street		.05						
	Intersection at Elm Street		.05					1	19
	Cove Street/Whipple Street		.1		1		1		20
	Seyffer Ford/Fenn Street		.1			29			
	Corner of Lyman & East Streets		.1						
	Hathaway Street/Sackett Street		.3						19
	Corner of Lyman & Newell Sts.		.05				1		
	Siblet Street/Sackett Street		.05		1	28			18
	Ontario Street/Opposite Ontario St.		.05				1		17
	Huron Street/Opposite Huron Street		.05				1		
	Michigan St./Opposite Michigan St.		.05						16
	Dorchester Ave./Opp. Dorchester Ave.		.1				1		
	Longfellow Ave./Opp. Longfellow Ave.		.05		1	27			
	Edison Avenue/Opposite Edison Ave.		.05						15
	Tennyson Ave./Opp. Tennyson Avenue		.05				1		
	Radcliff Avenue/Opp. Radcliff Ave.		.05						
	Pembroke Ave./Opposite Pembroke Ave.		.05		1	26			
	Parkside Ave./Opposite Parkside Ave.		.05						14
	Lombard St./Opposite Lombard Street		.15	3		29	2		
	----Opp. Silver Lk. Blvd./Sil.Lk.Bld.		.1				1		12
	----G.E. South Gate		.2	1		30	1		11
	Corner of East & Newell Streets		.3					1	12
	Flagstops		.65		2	28	1		
					2	26			11
							2		
	Opposite Junction Rd./Junction Road		.65		1	25			
	Flagstops				4	21			
	Winesap Rd./Opposite Winesap Road		.05						9
	Imperial Avenue/Opposite Imperial		.1		2	19	1		8
	Wealthy Ave./Opposite Wealthy Ave.		.05		7	12	1		
	Baldwin Avenue/Opposite Baldwin Ave.		.05						
	Dutchess Ave./Opposite Dutchess Ave.		.1						
	McIntosh Dr. /Opposite McIntosh Dr.		.1		2	10			
	Dalton Division Road/Hubbard Avenue		.1						
	Eleanor Rd./Opposite Eleanor Road		.05		1	9			7
	Greenridge Plaza		.1		6	3	7		
	OUTBOUND : DROP 3				3	0			

()=number of runs bus(es) made during the day.

DALTON-HINSDALE ROUTE

Tyler St. Deviation

OUTBOUND
(Read Down)

INBOUND
(Read Up)

STOPS OUTBOUND / INBOUND	Miles Between Stops	Total (2)			Total (2)		
		on	off	net	on	off	net
Popcorner/Newberry's		27		3		9	3
First Agricultural Bank/Depot St.	.1	10	1	30			12
Eagle Street/Columbus Avenue	.1	5		39		4	
Melville Street/Summer Street	.1	4		44			16
Capitol Theater/Union Street	.05			48		4	
St. Joseph's Church/Bradford Street	.05						20
Maplewood Avenue/Linden Street	.05	3				9	
White Terrace/Madison Avenue	.1			51			29
Orchard Street/Kent Avenue	.05				1		
Burbank Street/Wahconah Street	.05						28
Corner of North & Tyler Streets	.05	4				3	
First Street Crosses	.1			55			
Opposite Myrtle St./Myrtle Street	.05						31
Smith Street/Pleasure Avenue	.05		1			1	
Opposite Courtland St./Courtland St.	.05			54			
Cherry Street/Pine Street	.1		1				32
Opposite Glenwood Ave./Glenwood Ave.	.05			53	5		
Burbank Street/Grove Street	.1						
Brown Street Crosses	.05		2	51			27
Parker Street Crosses	.05	2		53	1	2	
Plunkett Street Crosses	.1						28
Forest Place/Curtis Terrace	.05		3	50	1		27
Woodlawn Avenue Crosses	.1	4		54	1	7	33
Opp. Westminster St./Westminster	.05				4		29
Harvard Street Crosses	.05		2	52	1	1	29
Dartmouth Street Crosses	.1				1		28
Benedict Road Crosses	.05				1		
N.Hampshire Ave./Opp. New Hampshire	.05						27
Rhode Island Ave./Pittsfield Avenue	.05					1	
New York Ave./Delancy Avenue	.1						
New Jersey Ave./Ridgeway Ave.	.1						
Opp. Brighton Ave./Brighton Avenue	.05						
Ohio Ave./Somerset Avenue	.1						
Opp. Windsor Ave./Windsor Ave.	.05						
Allendale Road/Allengate Avenue	.1		1	51			
Opp. Kensington Ave./Kensington Ave.	.05						28
Connecticut Ave./Yorkshire Avenue	.05		1	50	1		
Plastics Ave./Thorndike Avenue	.2		1	49			27
---- G. E. Plastics Avenue Gate	.1	4		53		10	
---- Flagstops	.95		5	48			
Opp. Devonshire Ave./Devonshire Ave.	.45						37
Corner of Dalton & Crane Avenues	.1				2		
Allendale Shopping Center	.75		1	47			
---- Colonial Gardens	.2						
---- Flagstops to Dalton Town Line							35

()=number of runs bus(es) made during the day.

NORTH-SOUTH ROUTE

Lee To Park Square (Pge.1)

OUTBOUND
(Read Down)

INBOUND
(Read Up)

	STOPS		Miles Between Stops	Total (12)			Total (12)		
	OUTBOUND	INBOUND		on	off	net	on	off	net
PITTSFIELD	Berkshire Common/Cottage IV		.05	103	7	135		28	152
	South Church St./Colt Ins. Agency		.05			231		4	180
	W. Housatonic St./E. Housatonic St.		.05	3				4	184
	Reed Street/Taconic Street		.1			234			
	Clinton Ave./Opposite Clinton Ave.		.05		2		1		188
	Henry Avenue/Broad Street		.05	3		232			187
	Buel Street/Colt Road		.05		2	235	1	1	188
	George Street/Memorial Park		.05			233	1	3	190
	St. Theresa's Church/Memorial Park		.05					1	191
	Boylston St./Opposite Boylston		.05					1	192
	Boylston St./Opposite Boylston		.1				2		190
	Bay State Rd./Crofut Street		.1	1	1		1		190
	Taylor Street/Crofut Street		.05	1	2	233		1	189
	Fairfield St./Doctor's Park		.1			232			190
	Harding Street/Opposite Harding St.		.05				2	1	189
	Harding Street/Opposite Harding St.		.1				2		187
	Lipton Oil/Underhill Place		.1		2			2	
	Gamwell Avenue/Opposite Gamwell		.05		1	230			
	Cole Avenue/Opposite Cole Avenue		.05		3	229			189
	Cole Avenue/Opposite Cole Avenue		.05		3	226	4		185
	Spadina Parkway/Warren Terrace		.05	2	4	224	1		184
	Traffic Light @ S. Mountain Road		.05		1	223		1	
	Berkshire Life/Pittsfield Country Cb.		.2		2	221			185
Flagstops		1.7		2	219	1		184	
Kings Dept. Store/Holmeswood Terrace			6	28	197	18	9	175	
Opp. Holmes Road/Holmes Road		.3		1	196		2	177	
Berkshire Trailer Pk./Opp. Trailer Pk		.1					1	176	
West Mtn. Rd./Colligan Water Cond.		.1					1	179	
Carwash/New Lenox Road		.1	2	6	192	3	1	177	
Opp. Nursing Home/Nursing Home		.15		7	185	2	1	176	
Limekiln Road/Wellington Arms		.35	1	3	183	2		174	
W. Dugway Road/Holiday Inn		.55	1	8	176	7		167	
Lenox Bypass Begins/E. Dugway Road		.55				2		165	
Aspinwall Spables/State DPW Bldg.		.15		5	171	2	2	165	
Church-on-the-Hill/Taconic Avenue		.45	1	1	171	2			
Greenwood Street/Hubbard Street		.05		1	170				
St. Ann's Church/Opp. St. Ann's		.15		1	169				
Cliffwood Street/Franklin Street		.1	2	17	154	12	2	163	
Sunset Street/Housatonic Street		.1		17	137	1		153	
Town Hall/Curtis Hotel		.15	8	19	126	49	4	152	
Talbot's (Store)/Church Street		.05	4	11	119			107	
Kemble Street/Ore Bed Road		.05	2	11	110	3	1	105	
Opp. Morgan Manor/Morgan Manor		.1		3	107	2		103	
Flagstops		.75	1	2	106	1		102	
Lenox Bypass Crosses		.85				1		101	
Flagstops						3		98	
East Street Crosses		.4		2	104	3	2	97	
Lawton Street/Elm Street		.2		6	98	7		90	
Church Street/Crystal Street		.2	1	11	88	5	1	86	
Opp. Sunshine Ave./Sunshine Ave.		.35				1		85	
Opp. Washington Mtn. Rd./Wash. Mtn.		.15				3	2	84	
Int. Bradley, Reservoir & Greylock Sts		.2		4	84	2	3	85	
Opposite Olive Street/Olive Street		.4	1	1	84	2		83	
Veteran's Home/Sharyn Drive		.05	18	2	100	1	24	106	
Opp. Pine Ridge Dr./Pine Ridge Dr.		.05	7		107		3	109	
Corner East & E. Center Streets		.3		3	104	2	1	108	

()=number of runs bus(es) made during the day.

WEST ST.-CRANE AVE. ROUTE

BCC To Park Square

OUTBOUND
(Read Down)

INBOUND
(Read Up)

STOPS /	Miles Between Stops	Total (//)			Total (//)		
		OUTBOUND	INBOUND	net	on	off	net
Newberry's/Popcorner				90	12	25	75
BCC Bus Stop/Edwin Street	.15	113	20	183			88 *
Center Street Crosses	.1	8	1	190			166
Adams Superama/Hurlbut Street	.15				4	1	163
Salvation Army/WMECO	.2	1	5	186	2	3	164
S. John Street/Riverview West	.05					2	166
Onota Street/S. Onota Street	.05	7	5	185	5	3	164
Albro Street/Merriam Street	.1	4	1	190	2	4	166
St. Mark's Church/Euclid Avenue	.05	2	3	189	2		164
Opp. Backman Ave./Backman Ave.	.05		2	187	3	1	162
Opp. Crosby Jr. High/Crosby Jr. High	.25		1		1	1	162
Opposite Roselyn Dr./Roselyn Drive	.2			186			163
Valentine Road/Jason Street	.15		2	184	1		162
Opp. Sherwood Drive/Sherwood Drive	.05		4	180	3	1	160
Opp. Nottingham Dr./Nottingham Dr.	.1		1	179	1		
Tor Court/Opposite Tor Court	.15		7				159
Opp. Roberta Road/Roberta Rd.	.25		1	172	2		
Opp. Eleanor Road/Eleanor Road	.05		1	171			157
Blythewood Dr./Fort Hill Ave.	.4	1	2	170	1		156
Churchill St./Opp. Churchill Street	.25		4	166	4		152
Churchill Crest	.05		3	163	2		
Opp. Mountainview Dr./Mtnview. Dr.	.2		1	162			150
Berkshire Community College	.4				1		149
			161	0	149		0
				162			
FLAGSTOP : OUTBOUND			1	161			
INBOUND : BERKSHIRE COMMON *					1	79	88 *
							166 *

()=number of runs bus(es) made during the day.

WEST PITTSFIELD-HIGHLAND/HANCOCK ROUTE

West Pittsfield To Park Square

OUTBOUND
(Read Down)

INBOUND
(Read Up)

STOPS OUTBOUND / INBOUND	Miles Between Stops	Total (13)			Total (13)		
		on	off	net	on	off	net
Newberry's/Popcorner		37	12	45	13	33	50 *
----- Haddad's Rug Company				70			
----- Berkshire Common	.15 .2						
BCC Bus Shelter/Hilton Entrance		1				5	71
Center Street/West Street	.1	1	4	71	1	2	76
Hellawell Cadillac-Olds/Church St.	.05	5	1	68		3	77
South Church Street Crosses	.05			72	2	2	80
W. Housatonic St/Center Street	.1						
Jimmy's Restaurant/Henry Avenue	.1		1				80
Mill Street/Harris Street	.05		1	71	1		79
Opposite Hollister St/Hollister St.	.05	1	4	68	3		76
Brenton Terrace/Clapp Park	.05				2		74
Hawthorne Ave./Clapp Park	.05		1	67		2	
S. Merriam St./McKinley Terrace	.2		2	65			76
Greenway Street/Barker Road	.05		3	62	3		73
Britton Street/Barker Road	.1		5	57	1		72
Nursing Home/Hampshire Street	.05				1		71
Pittsfield Plaza/Woodleigh Road	.2		2	55	2		69
Gale Ave/Sunoco Gas Station	.15		6	49	3		66
Franklin Street/Opposite Franklin St.	.1		4	45	4		62
Plymouth St./Cadwell Road	.2		1	44	4		58
Essex Street/Opposite Essex Street	.1		6	38	4		54
Osceola Street/Eaton's	.1		3	35	1		53
Oswald Avenue/Opposite Oswald Ave.	.1		2	33	7		46
Frederick Street/Opp. Frederick St.	.1	1		34	2		
Hungerford St./Audubon Street	.15						44
Morgan St/Opposite Morgan Street	.15	1		35	1		
-----Enter W. Housatonic St.	.05 .1		1	34			43
Crossin Terrace -----	.25				2		
----- Bryant Street on Right	.25	1	1	34	3	1	41
Hungerford Street -----	.25						
----- Hungerford Street on Left	.25		1	33			39
Clarkson Avenue -----	.15				4	1	
----- Clarkson Avenue on Left	.1	1	2	32			36
Stearns Avenue -----					3		
Jones Avenue -----	.05 .25	4	2	34			33
----- Melbourne Road on Right	.45	1		35		1	34
Holly "K" Motel	.3				13	8	29
			12	23	7		22
			1	22			
OUTBOUND : DROP 1							50 *
PARK SQUARE INBOUND : DROP 1 *						1	51 *

()=number of runs bus(es) made during the day.

CHAPMAN'S CORNERS-ONOTA ST. ROUTE
Taconic H.S. To Park Square

OUTBOUND
(Read Down)

INBOUND
(Read Up)

STOPS OUTBOUND / INBOUND	Miles Between Stops	Total (12)			Total (12)		
		on	off	net	on	off	net
First Agricultural Bank/Depot Street	.1	23	10	33	1	8	31
Corner North St. & Columbus Avenue	.1	6	9	46	1	16	38
Center Street Crosses	.05			43			
Francis Avenue Crosses	.1	2	3		1	1	53
Daniels Avenue Crosses	.05			42			
Robbins Avenue Crosses	.1						
Dewey Avenue Crosses	.05				1		53
John Street/South John Street	.1						
Corner of Columbus Ave. & Onota St.	.05	3	1		2		52
Gilbert St./Opposite Gilbert St.	.1		1	44			
W. Union Street Crosses	.05		5	43	6		50
Monroe St./Opposite Monroe St.	.05	1		38			
Linden Street Crosses	.1		2	39	5		44
Opposite Chestnut St./Chestnut St.	.05		4	37	4		39
Hillside St./Locust St.	.05		3	33	2		35
Von Nida Ave./Walnut Street	.05		3	30	2		33
Martin St./Woodbine Avenue	.05		1	27	1		31
Warriner St./View Street	.1		6	26	4		30
Corner of Onota St. & Lakeway Drive	.05		4	20	3		26
Dean Place/Opposite Dean Place	.05			16			
Acorn Street Crosses	.05		1		2		23
Sixth Street/Garden Street	.05		2	15	2		21
Opposite Wigmore St./Wigmore St.	.1			13			
Eighth Street/Miller Street	.1						
Corner of Lakeway Dr. & Valentine Rd	.2	1	1				
Taconic High School	.35	1	8	13	18		19
				6			1
OUTBOUND - DROP 5			5	1			

() = number of runs bus(es) made during the day.

CHAPMAN'S CORNERS-ONOTA ST. ROUTE

Chapman's Corners To Park Square

INBOUND
(Read Down)

OUTBOUND
(Read Up)

INBOUND	STOPS /	OUTBOUND	Miles Between Stops	Total (12)			Total (12)		
				on	off	net	on	off	net
Chapman Corners				3		2	1	4	4
Lathers Avenue/Vinal Avenue			.1	1		5		2	7
Opposite Cummings Ave./Cummings Ave.			.05			6			
Opposite Oliver Ave./Oliver Avenue			.05				2		9
Opposite Plumb St./Plumb Street			.05	2		8		2	7
Lutheran Church/Reed Avenue			.05						
Flagstops			.6	1		9		1	9
Shetland Dr./Opposite Shetland Dr.				4				10	10
Opposite Kris Lane/Kris Lane			.2	1		13		1	20
Opposite Hall School/Hall School			.25			14			
Opposite Pomeroy Ave./Pomeroy Avenue			.15					2	21
Gravesleigh Terrace/Cooper Parkway			.3	2		16		4	23
Corner of William St. & Holmes Road			.25	4		20		4	27
Revere Pkwy./Whittier Avenue.			.05	3		23		2	31
Concord Pkwy./Emerson Avenue			.05	4		27		5	33
Lexington Pkwy./Opp. Lexington Pkwy.			.05	4		31		4	38
Bishop Pkwy./Opposite Bishop Pkwy.			.1	8		39			
Waverly Street/Beverly Street			.05	3		42			
Arlington St./Opposite Arlington St.			.05	3		45			42
Alexander Ter./Opp. Alexander Ter.			.05	1		46		6	48
High Street Crosses			.05	2		48		1	
Int. Dawes, Caledonia & Appleton			.15	1		49			
Deming St./Opposite Deming Street			.05	4		53			49
Corner of Appleton & Dawes Avenue			.05	2		55		3	52
Corner of E. Housatonic & Appleton			.05	7		62		2	54
Opposite Howard St./Howard Street			.3	3	6	59	8		46
Pomeroy Avenue Crosses			.05	3		62	1	1	
Bartlett Avenue Crosses			.05					1	46
Wendell Avenue Crosses			.1	1		63			47
Corner of South & E. Housatonic Sts.			.05		1	62	1		46
Colt Ins. Agency/South Church St.			.05		3	59	1	1	46
Cottage IV/Berkshire Common			.15					1	47
Popcorner/Newberry's			.05		2	57	11	3	39
			.1	8	32	33	29	21	31

DROP 4
NET=0

() = number of runs bus(es) made during the day.



BCRPC/BRTA · BUS RIDER SURVEY

DEAR BUS RIDER: Please answer these questions for us. Your answers will help us to provide you with better bus service. Notice that you do not have to sign this form. INSTRUCTIONS: PLEASE CIRCLE THE LETTER ABOVE THE BEST ANSWER TO THE FOLLOWING QUESTIONS AND FILL IN ANY BLANK SPACES PROVIDED.

1. Where are you going on this bus? A Work B School C Shopping D Medical/Dental E Social/Recreation F Home or Other					
2. Where is this place located? Please give the name of the nearest street corner or identifying location: A Pittsfield B Dalton C Hinsdale D Lanesboro E Lenox F Lee					
3. Where are you coming from? Please give name of nearest street corner or identifying location: A Pittsfield B Dalton C Hinsdale D Lanesboro E Lenox F Lee					
4. How often do you use the bus? A every day B 2-3 times a week C 1 time each week D 2 times a month E 1 time each month F Less than once per month					
5. What is the maximum fare you consider this bus trip to be worth? A 0-15¢ B 15-30¢ C 30-50¢ D 50-75¢ E 75-\$1.00 F More than \$1.00					
6. Of the following improvements in bus service, which one would be most useful to you? A Buses run more often B Saturdays C Sundays D Evenings (6:00-10:00) E More Bus Routes F Other					
7. Are you male or female? A Male B Female					1164
8. About what is your age? A under 15 years B 15-20 C 21-44 D 45-59 E 60-65 F over 65					
9. How many cars in your family? A None B 1 C 2 D 3 E 4 or more					
10. What is your main occupation? A Employed head of house B Employed not head of house C Housewife D Retired E Student F Other Unemployed					
11. What is your approximate yearly family income? A Less than \$4,000 B \$4,000-\$8,000 C \$8,000-\$10,000 D \$10,000-\$12,000 E \$12,000-\$15,000 F More than \$15,000					

OVER PLEASE

12. Do you have any suggestions for improving the comfort, convenience, or safety of the bus service?

THANK YOU VERY MUCH. PLEASE RETURN THIS FORM TO THE PERSON WHO GAVE IT TO YOU. 110176

BCRPC/BRTA ON-BOARD BUS SURVEY (11/17/76) SUMMARY SHEET - ALL ROUTES

PART A		A	B	C	D	E	F	TOTAL Responses
1. Purpose	Work	School	Shopping	Medical/Dental	Social/Recreation	Home or Other		
	308 (28.3%)	56 (5.2%)	180 (16.6%)	32 (2.9%)	47 (4.3%)	464 (42.7%)	1087 (77.6%)	
2. Destination	Pittsfield	Dalton	Hinsdale	Lanesboro	Lenox	Lee		
	672 (74.3%)	55 (6.1%)	4 (0.4%)	8 (0.9%)	105 (11.6%)	61 (6.7%)	905 (64.6%)	
3. Origin	Pittsfield	Dalton	Hinsdale	Lanesboro	Lenox	Lee		
	603 (68.0%)	91 (10.3%)	11 (1.2%)	24 (2.7%)	97 (10.9%)	61 (6.9%)	887 (63.4%)	
4. Frequency of use	every day	2-3 times a week	1 time each week	2 times a month	1 time each month	Less than once per month		
	420 (47.8%)	307 (35.0%)	78 (8.9%)	39 (4.4%)	9 (1.0%)	25 (2.8%)	878 (62.7%)	
5. Maximum Fare	0-15¢	15-30¢	30-50¢	50-75¢	75-\$1.00	More than \$1.00		
	122 (14.4%)	486 (57.4%)	219 (25.9%)	14 (1.7%)	5 (0.6%)	1 (0.1%)	847 (60.5%)	
6. Service Improvement	Buses run more often	Saturdays	Sundays	Evenings (6-10:00)	More Bus Routes	Other		
	111 (13.2%)	518 (61.7%)	19 (2.7%)	114 (13.6%)	53 (6.3%)	24 (2.9%)	839 (59.9%)	

BCRPC/BRTA ON-BOARD BUS SURVEY (11/17/76) SUMMARY SHEET - ALL ROUTES

PART B		A	B	C	D	E	F	TOTAL Responses						
7. Sex		Male 244 (28.8%)	Female 604 (71.2%)	—	—	—	—	848 (60.6%)						
8. Age		under 15 117 (12.5%)	15-20 187 (19.9%)	21-44 252 (26.9%)	45-59 178 (19.0%)	60-65 76 (8.1%)	Over 65 128 (13.6%)	938 (67.0%)						
9. Autos per Family		None 287 (35.2%)	1 350 (43.0%)	2 140 (17.2%)	3 24 (2.9%)	4 or more 13 (1.6%)	—	814 (53.1%)						
10. Occupation		Employed head of house 176 (21.2%)	Employed not head of house 185 (22.2%)	Housewives 136 (16.3%)	Retired 102 (12.3%)	Student 109 (22.7%)	Other Unemployed 44 (5.3%)	832 (59.4%)						
11. Family income		Less than \$4,000 160 (26.5%)	\$4,000-\$8,000 120 (19.9%)	\$8,000-\$10,000 72 (11.9%)	\$10,000-\$12,000 62 (10.3%)	\$12,000-\$15,000 66 (10.9%)	More than \$15,000 124 (20.5%)	604 (43.1%)						
HOUR:		6 am 39 (2.8%)	7 am 124 (8.9%)	8 am 93 (6.6%)	9 am 129 (9.2%)	10 am 92 (6.6%)	11 am 124 (8.9%)	12 am 121 (8.6%)	1 pm 121 (8.6%)	2 pm 138 (9.9%)	3 pm 171 (12.2%)	4 pm 149 (10.6%)	5 pm 99 (7.1%)	1400 (100%)

BRTA ON-BOARD BUS SURVEY
 NOVEMBER 17, 1976

ELM STREET ROUTE

TIME	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM
	28	61	52	57	48	52	60	65	74	81	74	41	
								A	B	C	D	E	F
1. WHERE ARE YOU GOING ON THIS BUS?							165	22	72	15	13	248	
2. WHERE IS THIS PLACE LOCATED?							386	4	0	1	6	4	
3. WHERE ARE YOU COMING FROM?							389	4	0	1	2	0	
4. HOW OFTEN DO YOU USE THIS BUS?							203	136	33	15	1	10	
5. WHAT IS THE MAX. FARE BUS TRIP WORTH?							60	243	81	2	1	0	
6. IMPROVEMENT IN BUS SERVICES?							45	250	5	45	29	9	
7. ARE YOU MALE OR FEMALE?							114	277					
B. ABOUT WHAT IS YOUR AGE?							32	81	103	96	41	59	
9. HOW MANY CARS IN YOUR FAMILY?							124	173	59	12	4		
10. WHAT IS YOUR MAIN OCCUPATION?							94	102	50	50	69	13	
11. WHAT IS YOUR APPX. YRLY FAMILY INCOME?							59	44	38	27	38	64	
ROUTE TOTAL													0693

DALTON - HINSDALE ROUTE

TIME	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM
	44	20	32	12	30	24	11	15	15	30	22	16	
							A	B	C	D	E	F	
1. WHERE ARE YOU GOING ON THIS BUS?							62	24	38	3	6	56	
2. WHERE IS THIS PLACE LOCATED?							114	49	4	0	2	0	
3. WHERE ARE YOU COMING FROM?							72	86	11	0	0	0	
4. HOW OFTEN DO YOU USE THIS BUS?							88	55	17	7	1	5	
5. WHAT IS THE MAX. FARE BUS TRIP WORTH?							29	91	46	1	1	0	
6. IMPROVEMENT IN BUS SERVICES?							27	95	1	20	8	10	
7. ARE YOU MALE OR FEMALE?							47	120					
8. ABOUT WHAT IS YOUR AGE?							35	42	47	36	10	21	
9. HOW MANY CARS IN YOUR FAMILY?							41	79	44	2	1		
10. WHAT IS YOUR MAIN OCCUPATION?							37	33	29	16	48	3	
11. WHAT IS YOUR APPX. YRLY FAMILY INCOME?							20	23	14	13	18	32	
ROUTE TOTAL	0256												

BRTA ON-BOARD BUS SURVEY

NOVEMBER 17, 1976

NORTH - SOUTH ROUTE

↓ TIME 6 AM 7 AM 8 AM 9 AM 10 AM 11 AM 12 PM 1 PM 2 PM 3 PM 4 PM 5 PM 6 PM

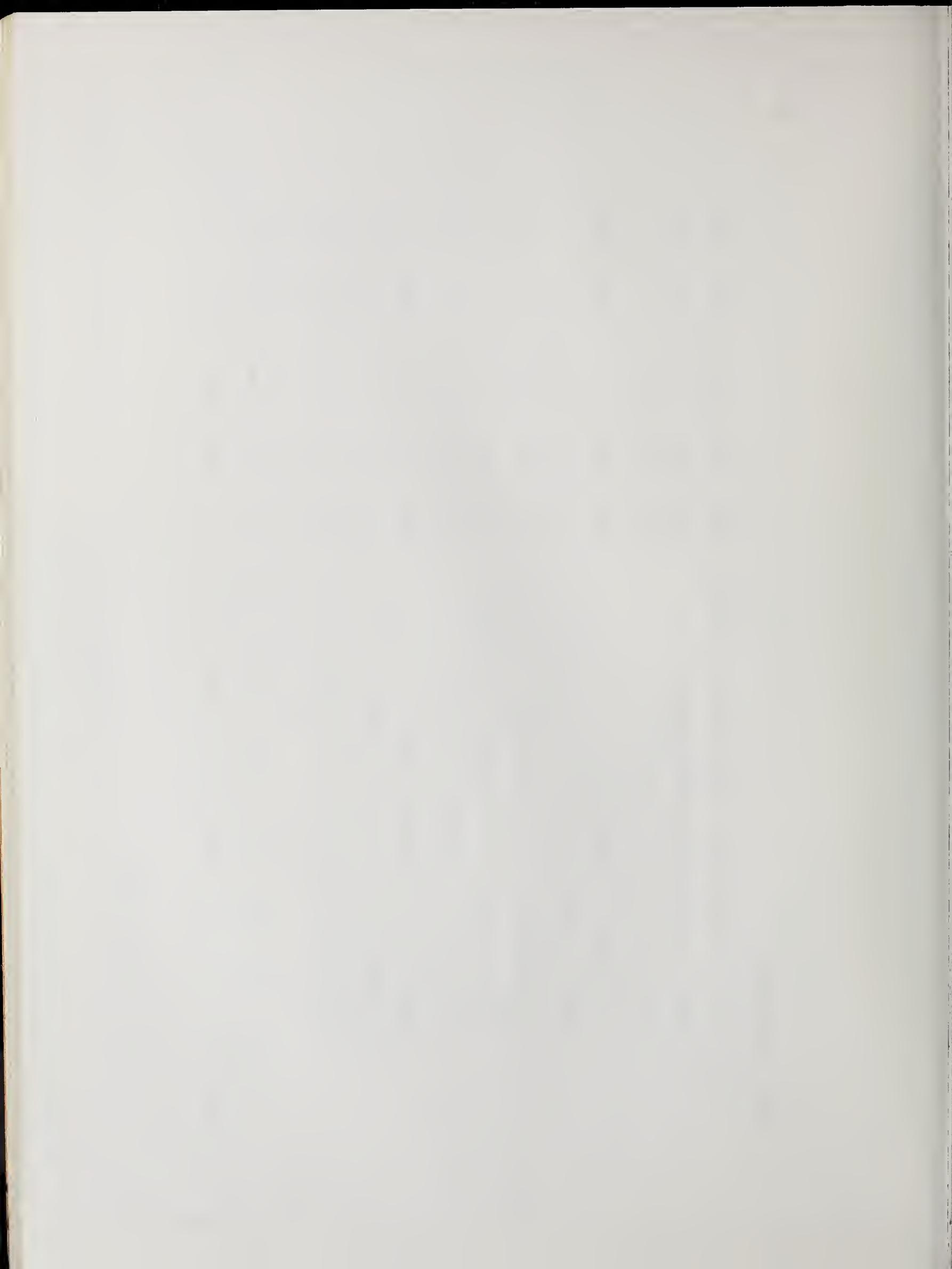
11 19 20 40 32 42 37 45 49 60 53 42

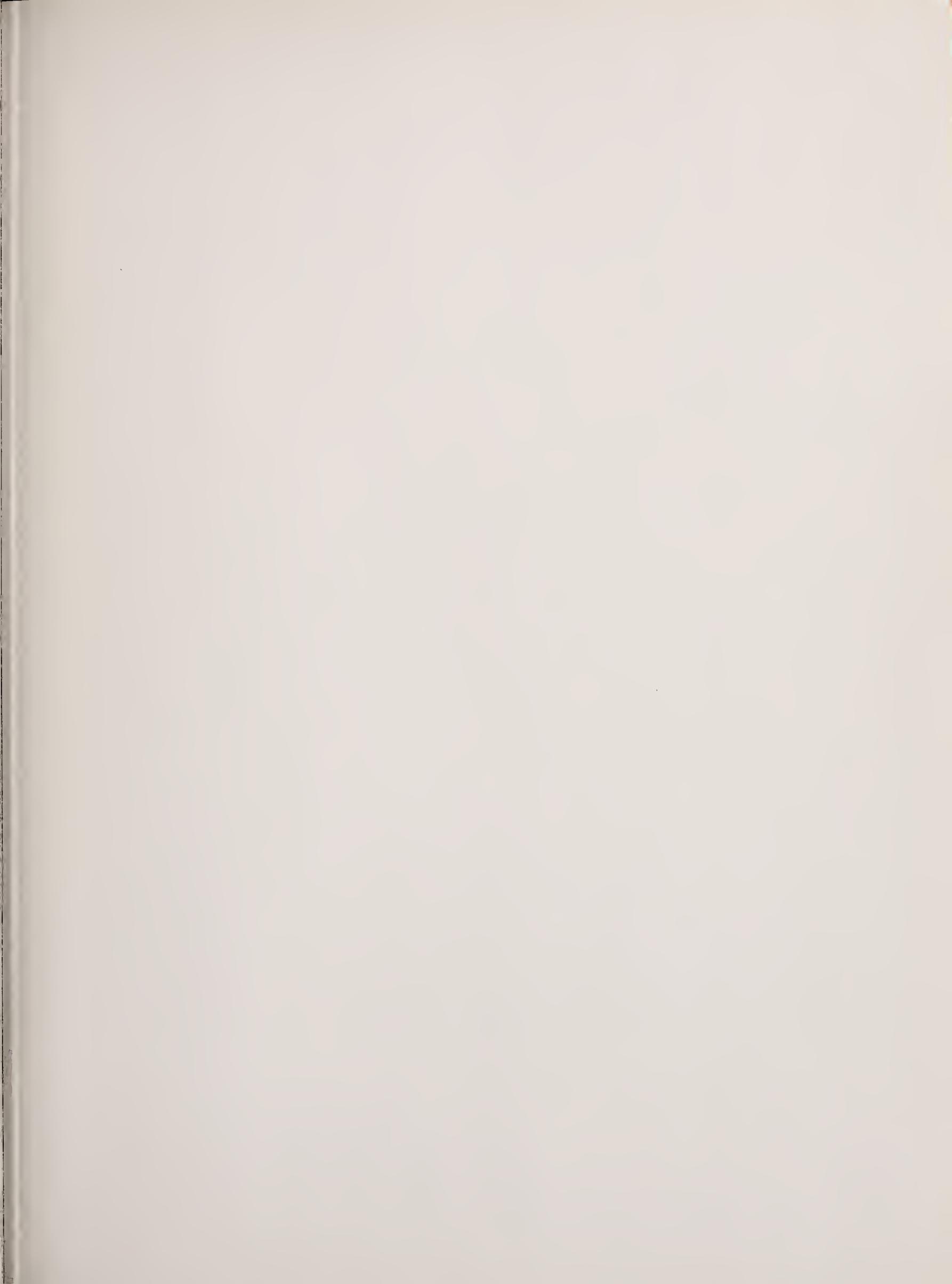
A B C D E F

- 1. WHERE ARE YOU GOING ON THIS BUS? 80 10 70 14 28 160
- 2. WHERE IS THIS PLACE LOCATED? 171 2 0 7 97 57
- 3. WHERE ARE YOU COMING FROM? 142 0 0 23 95 61
- 4. HOW OFTEN DO YOU USE THIS BUS? 129 115 28 17 7 10
- 5. WHAT IS THE MAX. FARE BUS TRIP WORTH? 33 151 92 11 3 1
- 6. IMPROVEMENT IN BUS SERVICES? 39 172 13 19 16 5
- 7. ARE YOU MALE OR FEMALE? 83 206
- 8. ABOUT WHAT IS YOUR AGE? 50 64 101 46 25 40
- 9. HOW MANY CARS IN YOUR FAMILY? 122 97 37 10 8
- 10. WHAT IS YOUR MAIN OCCUPATION? 44 50 49 36 72 28
- 11. WHAT IS YOUR APPX. YRLY FAMILY INCOME? 81 53 20 21 10 28

ROUTE TOTAL 0451















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